Strait of Georgia and Northern Vancouver Island Sport Fishery Creel Survey Statistics for Salmon and Groundfish, 2000

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STRAIT OF GEORGIA AND NORTHERN VANCOUVER ISLAND SPORT FISHERY CREEL SURVEY STATISTICS FOR SALMON AND GROUNDFISH, 2000

by

D. C. Hardie, D. A. Nagtegaal, J. Sturhahn, and K. Hein

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ABSTRACT

Hardie, D. C., D. A. Nagtegaal, J. Sturhahn, and K. Hein. 2002. Strait of Georgia and Northern Vancouver Island sport fishery creel survey statistics for salmon and groundfish, 2000. Can. Manuscr. Rep. Fish. Aquat. Sci. 2608: 112 p.

This report documents the 2000 catch and effort estimates for the Strait of Georgia and Northern Vancouver Island sport fishery creel surveys. Catch and effort statistics for the Strait of Georgia and Northern Vancouver Island tidal sport fishery are presented for each month, Statistical Area and by individual species. Strait of Georgia creel survey data collection began in 1980 and continues today. Historical data are presented from as far back as 1960 and comparisons are made between the current and these historical data to determine trends in catch and effort.

The 2000 Strait of Georgia statistics for Statistical Areas 13, 14, 15, 16, 17, 18, 19, 28 and 29, were derived from 13,480 fishing interviews and 47 aerial surveys. For the entire year 2000 anglers conducted an estimated 170,798 boat trips and kept 32,750 chinook, 4,678 coho, 2,558 chum, 9,771 pink, 6,367 sockeye salmon, as well as 543 halibut, 6,127 lingcod and 54,881 rockfish. Catch and effort for 2000 shows a continuing downward trend, effort has decreased 1.8% (161,316 to 158,404) and total salmon catch decreased 31% (71,614 to 49,752) from 1999. Historically effort has dropped from a high of 664,517 boat trips in 1988 and chinook catch has dropped from a high of 369,445 in 1984. Total salmon catch per boat trip has decreased from 0.47 in 1999 to 0.33 in 2000. Chinook catch also decreased 35% from 43,559 in 1999 to 28,226 for the same period in 2000. Among salmon examined for adipose-clips, 6.8% of chinook and 86% of coho had adipose fin clips. The chinook catch consisted of 2.2% age 2 fish, 56.6% age 3 fish, 35.0% age 4 and 6.2% age 5. The length frequency distributions of the chinook and coho are also given.

The 2000 Northern Vancouver Island statistics for Statistical Area 12, were derived from 1,862 fishing interviews and 10 aerial surveys. Anglers conducted an estimated 15,934 boat trips and kept 4,628 chinook, 125 coho, 103 chum, 23,519 pink, 744 sockeye salmon, as well as 1,524 halibut, 1,066 lingcod and 8,959 rockfish. The effort for 2000 showed an decrease of 51% from 32,443 boat trips in 1999. Total salmon catch also decreased 44% from 52,227 in 1999. Total salmon catch per boat trip has increased from 1.60 in 1999 to 1.83 in 2000. Among chinook salmon examined for adipose-clips, 2.1% had adipose fin clips. The age composition of chinook catch consisted of 28.0% age 3 fish, 57.1% age 4 and 14.8% age 5 and older fish. The length frequency distributions of the chinook and coho are also given.

RÉSUMÉ

Hardie, D. C., D. A. Nagtegaal, J. Sturhahn, and K. Hein. 2002. Strait of Georgia and Northern Vancouver Island sport fishery creel survey statistics for salmon and groundfish, 2000. Can. Manuscr. Rep. Fish. Aquat. Sci. 2608: 112 p.

Ce rapport présente les captures et l'effort de pêche estimés à partir des relevés de la pêche sportive pour le détroit de Géorgie et le nord de l'île de Vancouver en 2000. Les statistiques sur la pêche sportive dans les eaux à marée de ces deux régions sont présentées par mois, par zone statistique et par espèce. La collecte de ces données pour le détroit de Géorgie a débuté en 1980 et se poursuit encore. Des données remontant jusqu'à 1960 sont présentées et comparées aux données actuelles pour déterminer l'évolution des captures et de l'effort de pêche.

Les statistiques de l'an 2000 pour les zones statistiques 13, 14, 15, 16, 17, 18, 19, 28 et 29 du détroit de Géorgie ont été obtenues à partir de 13 480 entrevues de pêcheurs et de 47 relevés aériens. On estime qu'au cours de l'année 2000, les pêcheurs sportifs ont effectué 170 798 sorties en bateau et ont gardé 32 750 saumons quinnats, 4 678 saumons cohos, 2 558 saumons kétas, 9 771 saumons roses, 6 367 saumons rouges, 543 flétans, 6 127 morues-lingues et 54 881 sébastes. Les données de captures et d'effort de pêche en 2000 montrent que la tendance à la baisse se poursuit : par rapport aux chiffres de 1999, l'effort de pêche a fléchi de 1,8 % (de 161 316 à 158 404) et les prises totales de saumon ont diminué de 31 % (de 71 614 à 49 752). L'effort de pêche avait atteint un sommet de 664 517 sorties en bateau en 1988, tandis que le nombre de saumons quinnats capturés annuellement avait atteint un maximum de 369 445 en 1984. Les prises totales de saumon par sortie en bateau ont baissé de 0,47 en 1999 à 0,33 en 2000. Les prises de saumon quinnat ont diminué de 35 %, soit de 43 559 en 1999 à 28 226 pour la même période en 2000. Quant aux saumons examinés pour voir s'ils étaient marqués, 6,8 % des saumons quinnats et 86 % des saumons cohos avaient la nageoire adipeuse coupée. Les prises de saumon quinnat était constituées de 2,2 % de poissons de 2 ans, de 56,6 % de poissons de 3 ans, de 35,0 % de poissons de 4 ans et de 6,2 % de poissons de 5 ans. La distribution de la fréquence des longueurs est également présentée pour les saumons quinnat et coho.

Les statistiques de l'an 2000 pour la zone statistique 12, qui couvre le nord de l'île de Vancouver, ont été obtenues à partir de 1 862 entrevues de pêcheurs et de 10 relevés aériens. On estime qu'au cours de l'année 2000, les pêcheurs à la ligne ont effectué 15 934 sorties en bateau et ont gardé 4 628 saumons quinnats, 125 saumons cohos, 103 saumons kétas, 23 519 saumons roses, 744 saumons rouges, 1 524 flétans, 1 066 morues-lingues et 8 959 sébastes. En 2000, l'effort de pêche a baissé de 51 % par rapport aux 32 443 sorties en bateau effectuées en 1999. Les prises de saumon totales ont également baissé, de 44 % par rapport aux 52 227 saumons capturés en 1999. Par contre, les prises totales de saumon par sortie en bateau ont augmenté de 1,60 en 1999 à 1,83 en

2000. Des saumons quinnats examinés pour voir s'ils étaient marqués, 2,1 % avaient la nageoire adipeuse coupée. Les prises de saumon quinnat était constituées de 28,0 % de poissons de 3 ans, de 57,1 % de poissons de 4 ans et de 14,8 % de poissons de 5 ans ou plus. La distribution de la fréquence des longueurs est également présentée pour les saumons quinnat et coho.

PART 1

STRAIT OF GEORGIA

INTRODUCTION

Part 1 of this report documents the 2000 catch and effort statistics for the Strait of Georgia sport fishery and presents the methodology for collecting these data. Data are presented in tables and graphs with catch and effort dating back to 1960. The 2000 catch and effort are displayed in tables by month, Statistical Area and species. Graphs showing historical trends and comparisons in catch and effort for 93-97 average, 1998, 1999 and 2000 are also provided. The 2000 report is one of a series of annual reports documenting the activities of the creel survey and providing official Strait of Georgia tidal sport fishery catch statistics. A list of previous reports in this series may be found in Appendix A. In this report all tables, figures and appendices are located at the end of text.

BACKGROUND

The Strait of Georgia fishery supports one of the most valuable recreational fisheries in British Columbia. Coded-wire tag recoveries indicate these fish stocks consist primarily of Fraser River, Puget Sound and East Coast Vancouver Island streams. There has been evidence of declining stocks since the 1970's (Argue et al. 1983). Various groups (Commercial, First Nation and Recreational) on both sides of the border depend on these stocks. There is also evidence from declining marine survival rates of salmon stocks (Cross et al. 1991; Beamish et al. 1994), that marine environmental factors may be involved.

The creel survey study area (Fig. 1, Appendix B) comprises over 5,900 km^2 of water surface area and has in excess of 2,400 km of shoreline. From its southern end near Victoria, the area extends about 290 km northwest to Campbell River and at its greatest width is about 32 km wide. Two major population centres, Vancouver and Victoria, and many smaller centres such as Nanaimo and Campbell River are located within the study area. Over 500 boat launch ramps, marinas and public wharves as well as thousands of private boat launching facilities provide access.

The recreational fishery is active throughout the year but over 85% of the effort occurs in the summer months of May to September (Collicutt and Shardlow 1993). The most sought after species in the Strait of Georgia recreational fishery are the chinook (*Oncorhynchus tshawytscha*) and coho (*O. kisutch*) salmon, but in recent years significant fisheries directed at pink (*O. gorbuscha*), sockeye (*O. nerka*), rockfish (*Sebastes)* and halibut (*Hippoglossus stenolepis*) have developed in certain areas.

The size of vessel, methods of fishing and terminal tackle vary widely depending on location and time of year. Vessels range from 4 m car-top boats to yachts more than 17 m in length, although most boats would be in the 5 m to 8 m range. Popular fishing methods include trolling, mooching, bucktailing and stripcasting.

Over the past three decades the recreational fishery in this area has undergone dramatic changes. Prior to 1960, the numbers of chinook and coho taken by the

commercial troll fleet was almost double that taken by sport fishermen. During the 1980's however, the situation reversed with the sport fishery taking more than triple the commercial harvest of chinook and coho. The recreational fishery is still the primary harvester of chinook and coho in the Strait of Georgia. Effort in the recreational fishery has fluctuated from about 200,000 boat trips in 1960 to peaks of 769,000 in 1980 and 600,000 in 1988 to an all time low of 162,000 boat trips in 1998.

The Creel Survey for 2000 ran from April to September in all Statistical Areas of the Strait of Georgia. Additional Creel Survey coverage was provided to Statistical Area 19 (12 months) and Areas 13 and 14 for October. For historical comparisons, the catch and effort statistics for April to September are used. The entire catch and effort statistics for the year 2000 are provided in the tables, figures and appendices.

The 2000 fishery showed a 2% decrease in effort to 158,000 boat trips from 161,000 in 1999. The chinook catch climbed through the 1960's with a peak in the mid 1970's of over 400,000 pieces and a second peak of 330,000 pieces in 1984. A steady decline has occurred since, to a low of 20,000 pieces in 1998. The chinook catch showed a significant improvement of 108% to 44,000 pieces in 1999. The 2000 catch however has declined once again by 35% to 28,000 pieces. Although annual coho catches have varied widely, an increase from about 200,000 pieces in 1960 to over one million pieces in 1988 was recorded. A gradual decline from 1988 levels to 98,000 pieces in 1997 has followed the general decline of stocks. The 1999 coho catch was an all time low of 315 pieces, this was due, however, to a majority of areas being closed to coho retention. The coho catch for 2000 has improved dramatically by 1200% to 4,200 pieces, primarily from retention of adipose-clipped only fisheries in selected areas.

From 1956 to 1976, estimates of catch and effort in the sport fishery published by the Department of Fisheries and Oceans (DFO) were based on subjective assessments completed by Fishery Officers and on small-scale creel surveys. The general lack of statistical rigor and consistency associated with these methods of catch estimation as well as the rapid growth of the recreational fishery led to the initiation of the Strait of Georgia Creel Survey Pilot Program in 1980 (DPA 1982). The survey has been run continuously (with minor interruptions) since then. Although many details such as sampling locations and times are regularly updated to reflect changes in the fishery, the basic design of the survey remains similar to the pilot project conducted in 1980.

Creel survey data are used for a variety of management and reporting purposes. Catch and effort information is also used by local people (both inside and outside DFO) to monitor the fishery in their area. In addition, creel survey information is used to predict the effect of regulation changes and to measure the success of conservation actions imposed. The adipose clip information collected during the survey is supplied to the Mark Recovery Program (Kuhn et al. 1988) and used in combination with other data for exploitation rate, marine survival and stock distribution analyses.

OBJECTIVES

The specific objectives of the 2000 Strait of Georgia creel survey were:

1. To estimate the sport angler effort, catches and releases of chinook, coho, chum, pink, sockeye salmon, halibut, lingcod, rockfish and other finfish by month for Statistical Areas 13 through 19, 28 and 29.

2. To estimate the catch rate for adipose-clipped chinook and coho in the sport fishery.

3. To estimate the age composition and mean length-at-age for chinook, and the length frequency for chinook and coho.

METHODS

STUDY DESIGN

The design of the Strait of Georgia Creel Survey conducted in 2000 was similar to that used by DPA Consulting Ltd. (1982) with some modifications to the data analysed, sampling intensity, flight routes and data processing. It is comprised of two independent surveys: angler interviews and aerial overflights. Angler interviews provide data on sport fishing catch per unit effort (CPUE) and daily activity patterns. Aerial overflights provide estimates of the total sport fishing effort in the study area at the time of the aerial survey. These data are combined to provide monthly estimates of total sport fishing effort and total catch of salmon and groundfish in the sport fishery. In its simplest form, the estimated total catch is calculated by multiplying the estimated total effort by CPUE.

The fishery was stratified according to the following criteria:

1. Month. The survey operated from April through to and including September for the entire geographic area. Statistical Area 19 received 12 months of survey coverage for 2000 and Statistical Areas 13 and 14 also received additional coverage for October.

2. Geographic area. Catch and effort estimates were produced for Statistical Areas 13 through 19, 28 and 29 (Fig. 1, Appendix B).

3. Day type. Weekend and mid-week days were considered independently because sport fishing activity is known to differ for the two types of days.

4. Time of day. Sampling shifts (one shift is a set number of consecutive hours of interviewing anglers at one site by one creel surveyor) were conducted during set time periods. From April to October sampling was conducted during either an

early shift (approximately 0700 to 1500 hours) or a late day shift (approximately 1500 to 2300 hours).

5. Guided versus unguided anglers. Certain sites are known to have considerable guided fishing effort. Unpublished data from previous surveys in this series indicate that the CPUE from guided boats differs markedly from unguided boats. Guided vs. unguided, was documented by the interviewer, however, at this time the catch estimate program does not generate catch and effort estimates differently for the two parties.

In each region, various landing sites were chosen as locations for surveyors to conduct interviews. Site selection was based on four criteria: representativeness, traffic volume, site accessibility and adequate observation points. Discussions with local fishers, marina operators and Fisheries Officers and data from previous surveys were used to choose sites that were representative of the local sport fishing activity (i.e. sites which were used by a wide cross-section of anglers). Sites with expected traffic volumes of more than 15 boats per day in the summer were considered as possible sampling locations. Expected traffic volumes for sites were compiled from previous surveys or from discussions with marina operators or local Fisheries Officers.

Site accessibility refers to whether an interviewer can easily reach a site by car or ferry during the defined shift hours. Only sites with good accessibility were selected. As a result, landing sites on most of the islands in the Strait of Georgia were excluded from the survey. This was not expected to be a major factor, however, since most of the fishing occurs from accessible sites. The final criterion, adequate observation points, was essential for interviewers to obtain an accurate count of all boats returning to a landing site. At some large marinas, two sampling sites were identified if it was impossible to see all boats returning.

Allocation of sampling effort among months followed the same general pattern as fishing effort, that is, more effort was allocated during the summer when fishing effort is at its highest. Allocation of sampling effort among regions (groups of Statistical Areas) also followed fishing effort patterns. Within each month, each chosen site was allocated between 6 and 10 shifts. These shifts were divided equally among weekend and mid-week days and early and late daily time periods.

Fisheries and Oceans Canada conducted data collection, preliminary processing and conducted the estimation of catch and effort statistics.

DATA COLLECTION

Angler Interviews

Surveyors were stationed at access points for scheduled shifts to interview anglers as they returned from fishing. The number of boats returning to a site during a shift as

well as the number of interviews attempted and completed were recorded on a tally sheet. For each boating party landing, the following information was recorded on an interview form (Fig. 2):

1. Total number of licensed anglers in the boat.
2. Time of landing.
3. Whether the party had been sport fishing and whether guided or not guided.
4. Residency of anglers.
5. Time of departure and length of trip.
6. Time during which fishing lines were in the water.
7. Average number of lines in the water.
8. Catch Summary: -Total number and species of kept and released fish for each of the sub-Statistical Areas (possible to record for three separate sub-Statistical Areas).
   -Number of hours spent fishing, type of fishing conducted and primary fishing location in each sub-Statistical Area.
9. Coded wire tag information for chinook and coho.
10. Number of hours directed at each species.
11. Loss of catch to seals or sea lions.
12. Shellfish catch summary (New for 2000)

Interviewers trained in fish identification inspected each boating party's catch. Landed chinook and coho were checked for a missing adipose fin, which indicates the presence of a coded-wire tag, embedded in the fish's nose cartilage. In addition, scale samples for age determination and measurements of nose-fork length were taken during every sampling shift. Five scales were removed from the INPFC (International North Pacific Fisheries Commission) preferred area of each biosampled chinook (Mosher 1968).

In 2000, interviews were conducted each month at a maximum of 38 of the 50 designated landing sites (boat ramps, marinas, or resorts, Fig. 1) representative of the sport fishing activity in the survey area. Targets of desired precision and number of surveyors available dictated the number of sites selected in each area. For each area - day type - work block stratum, sampling shifts at a site were chosen on a near random basis from the total number of shifts available. For definition of the above terms (day type, work block, shift) see Appendix C.

Aerial Overflights and vessel counts

April through to and including October aerial surveys were conducted by J. O. Thomas in conjunction with Transport Canada from airplanes travelling along pre-defined routes (Fig. 3). This allowed observers to count vessels actively sport fishing throughout the Strait of Georgia. Planes flew at an altitude of 150-210 m (500-700 feet) to facilitate a broad range of vision and still allow easy identification of vessel type. Each plane carried one observer; the observer counted sport fishing boats in the flight

path. The counts of sport fishing boats for the Victoria (Statistical Area 19) creel survey for January, February, March, November and December were conducted by D. F. O. The counts were conducted from a boat travelling along a predefined route through Area 19.

The flight and boat path and time of departure were designed to cover major concentrations of sport fishing activity at peak periods. To maximise precision, the observers in the airplanes and boat avoided times during which fishing effort was rapidly changing. The number of overflights and boat runs each month was governed by budget constraints, targets of desired precision and by the expected number of interviews from a given number of sampling shifts (English et al. 1986). The days for overflights and boat runs during a month were randomly selected for each day type (weekday and weekend).

DATA ANALYSIS

Data analysis included calculation of catch and effort statistics, calulation of variance of total fishing effort and catch, estimation of marked chinook and coho salmon, estimation of age and length composition of chinook catch and length frequency distribution of coho. See Appendix C for established methods and equations used to analyse the above data.

To provide more accurate catch and effort estimates the computer analysis program was altered in 2000.

The initial creel survey catch estimate analysis program was based on the landing site. A mean catch per effort (CPUE) estimate for a landing group was based on data from several nearby landing sites. The CPUE estimates were then matched to the sub-area using information on the sub-areas fished by anglers returning to the landing sites within the landing group.

The new analysis program uses sub-area specific CPUE estimates to compute catch estimates for each sub-area. That is the actual catch and effort from fishing events with in the statistical sub-area are use to generate the estimates. The combination of sub-area CPUE estimates and sub-area effort estimates is a more accurate and simpler analysis approach (English 2000).

An additional change to the analysis program is the removal of factors used to weight the CPUE estimates for each landing site to account for the portion of boat trips interviewed and the number of interview shifts per work block. The number of boat trips that include fishing activity for a specific sub-area, the similarity in CPUE between adjacent sub-areas, and obtaining a large representative sample from each of the major fishing areas are the most important factors of the new method. Some formulas used to estimate the standard errors for CPUE and total catch have changed (Appendix C, formulas 1,2,3 and 4).

RESULTS AND DISCUSSION

DISTRIBUTION OF SAMPLING EFFORT

A total of 19 59 interviews, of which 13,480 involved actively fishing anglers, and 83 overflights were conducted in 2000 (Table 1). The monthly distribution of interviews generally reflected the monthly distribution of fishing effort (number of boat trips, Table 3,Fig. 4). The total interviews represent 11.2% of the estimated total fishing effort for the entire study area (170,798 boat trips, Table 3). The interviews involving actively fishing anglers represent 7.9% of the total fishing effort and ranged in each Statistical Area from lows of 0.9% in Area 15 and 3.8% in Area 18 to highs of 9.7% in Area 17 and 10.4% in Area 19 (Tables 1 and 4). For the 2000 Creel Survey Statistical Areas 13, 14, 15, 16, 17, 28 and 29 received coverage for April through to and including September while Statistical Area 19 received 12 months of coverage, and Statistical Areas 13 and 14 received additional coverage through October (Table 1).

SPORT FISHING EFFORT AND CATCH

For comparisons to 1999 catch and effort estimates only the estimates from April to September will be discussed. The total 2000 Strait of Georgia sport fishing catch and effort statistics are summarised for each species by month (Tables 3, 5, 7, 9 and 11) and by Statistical Area (Tables 4, 6, 8, 10 and 12). Fishing effort and catch statistics by species are presented for each combination of month and Statistical Area (Appendices D-1 to D-12).

Anglers made 158,404 boat trips during 2000; this is a 1.8% decrease in effort from 1999 (161,316). The estimated effort in 2000 shows a continuing downward trend in angler effort (Fig. 5). The fishing effort followed the same general seasonal pattern as seen in previous years where effort levels climbed steadily from April, peaked in August and declined in September and October (Table 3, Fig. 6).

The total finfish sport catch in the Strait of Georgia was estimated at 142,932 pieces (including steelhead and cutthroat trout) and consisted of 35% salmon, 27% groundfish and 38% rockfish (Tables 3, 5, 7 and 11). Anglers released an additional 87,662 salmon of mixed species (Tables 3, Appendix D-8).

The major regulation change, which affected the 2000 sport fishery were the large area closures on the West Coast of Vancouver Island, July 15 and August 1, 2000. The closure areas changed from no fishing outside of one mile, to a conservation corridor for Areas 21 to 25 with no fishing from the surfline to one nautical mile offshore. This closure was in effect to conserve West Coast Vancouver chinook stocks. Regulation changes introduced in 1998 and which remain in affect are:

1. Only barbless hooks were to be used when fishing for salmon, throughout the coast.

2. Non-retention of coho in all B. C. tidal and non- tidal waters was enforced with the exceptions of a few selected terminal adipose-clipped (hatchery) fisheries such as the mouth of the Capilano River (Statistical Area 28), a portion of Sechelt Inlet (Area 16), the Big Qualicum River (Area 14) and Sooke (Area 19). Coho daily limits were two with a possession limit of four; minimum size was 41 cm.

General regulations included a minimum size limit for chinook of 62 cm, with a daily limit of two, possession of four, and an annual limit of 15 for the Strait of Georgia (Cape Sutil to Cadboro Bay). In a portion of Statistical Area 19 (Cadboro Bay to Sheringham Pt.), the minimum size limit for chinook was 45 cm, with a daily limit of two, possession of four, and an annual limit of 20. See Appendix G for a historical synopsis of regulation changes.

Salmon

Salmon sport catches for the Strait of Georgia in 2000 totalled 49,752 pieces (April to September) and 56,130 for the entire creel period (Tables 1 and 3). The catch consisted of 57% chinook, 9% coho, 2% chum, 20% pink and 13% sockeye.

In 2000, anglers kept 28,226 chinook (Tables 3 and 4), compared to 43,559 in 1999 and 20,536 in 1998 (Table 2, Fig. 5). Although the 1999 catch showed a significant increase from 1998, the 2000 Chinook catch decreased 35% from 1999. The 2000 monthly chinook catches rose steadily through June and July and peaked in August (Table 3, Fig. 7). The seasonal (April to September) average catch efficiency for chinook decreased from 0.27 in 1999 to 0.18 fish per boat trip overall and peaked in the summer months at 0.24 fish per boat trip (Table 13, Fig. 8). Catch patterns were similar to those in recent years. The catch success rate for salmon in Statistical Area 19 for January to March was 0.65 and for November to December it was 0.59.

The spatial distribution of chinook catch followed a similar pattern to previous years. The highest catches were taken in Area 13 (36% of total), Area 19 (23%), and Area 14 (19%) (Table 4, Appendix D-2, Fig. 9). The chinook catch per unit effort (CPUE) was 0.27 for Area 13, 0.24 for Area 14 and 0.27 for Area 15 (Table 4, Appendix D-2). Peak catches occurred during June, July and August.

A large increase in coho catch occurred in 2000. The total coho catch was 4,294 pieces (Tables 3 and 4, Appendix D-3). Monthly coho catches peaked in August, but were consistently high through the summer months (Table 3, Fig. 10 and 11). The increase in coho catch was due to and increase of terminal (adipose-clipped) retention fishieries in Statistical Areas 13, 14, 19, 28 and 29. Of the coho catch, 64% occurred in Area 28.

In 2000, Strait of Georgia anglers caught 1,099 chum (Table 3, Fig. 12), with almost the entire catch coming from Area 13 (Table 4). Also 9,761 pink (Table 3 and 4,

Fig. 13) of which 97% came from Area 13 and 6,367 sockeye (Table 3, Fig. 14), where the highest catches also were from Area 13 (80%; Table 4).

The average number of salmon caught during each boat trip in 2000 decreased from 0.44 in 1999 to 0.31.

Year	CPUE
1990	1.46
1991	1.18
1992	1.59
1993	2.30
1994	0.89
1995	1.07
1996	0.81
1997	1.09
1998	0.24
1999	0.44
2000	0.31

In 2000, Areas 13 (24%) and 19 (22%) showed the highest effort expended with a total salmon CPUE of 0.71 and 0.22, respectively (Table 4, Fig. 15). Area 13 recorded the highest CPUE at 0.71 fish per trip. July and August were the most successful summer months at 0.39 and 0.45 salmon per trip. Statistical Area 19 had a CPUE of 0.65 for January to March and 0.60 for November and December (Table 13).

There were also significant numbers of salmon caught and released in 2000. A total of 52,576 chinook and 35,086 coho were released. Area 14 recorded the greatest number of salmon hooked and released followed by Area 13 (Table 4, Appendix D-8).

Groundfish

While salmon accounted for the majority of the total finfish sport catch historically, the 2000 Strait of Georgia catch consisted of 92,180 groundfish, which made up 65% of the overall catch (Tables 3 and 4).

Numbers within the "other" catch category declined dramatically, from 13,793 in 1999 to only 23 in 2000. The decline in numbers is attributed to more accurate species catch data in the field and estimates generated by the analysis program. The category of "other" catch has more accurately been placed into the total groundfish catch category.

Comparing catch estimate data from 1995 when the creel program was not as species specific to today's creel program catch estimates for 2000, total groundfish catch has increased 100% while "other" catch has decreased 99%. Angler effort when compared for the same period, shows a decline of 48% and total rockfish catch also shows a 50% decline. The species composition of the groundfish catch, based on the Tables 5, 7 and 11 data, is as follows:

Groundfish Species	Catch	% of Total Groundfish Catch	Major Catch Area
Halibut *(Hippoglossus stenolepis)*	496	0.5%	19
Lingcod *(Ophiodon elongatus)*	6,116	6%	16
Rockfish *(Sebastes* spp.)	53,320	59%	16
Other Groundfish	32,229	35%	16
Other Finfish	19		
Total	92,180	100%	

The majority of the groundfish catch was taken in the summer months, reflecting the high fishing effort in the summer (Tables 5, 7, 9 and 11; Fig. 6). Catch by Statistical Area for rockfish was highest in Area 16 (40% of total; Table 8). Lingcod were caught in greatest numbers in Area 16 (20% of total; Table 6), while the largest halibut catch came from Area 19 (91% of total; Table 6). Area 16 produced the largest catch of other groundfish (Table 12, Appendix G.).

Rockfish species were identified for the entire survey area in 2000, catch and release estimates were generated for nine species (Tables 7, 8, 9 and 10). The major catches are shown below. The "other" rockfish category consists of canary (***Sebastes pinniger***), china (*S. nebulosus*), redstripe (*S. proriger*), tiger (*S. nigrocinctus*), yellowtail (*S. flavidus*) and unidentified species.

Rockfish Species	Catch	% of Total Rockfish Catch	Major Catch Area
Black *(Sebastes melanops)*	237	0.4%	19
Copper *(Sebastes caurinus)*	10,613	20%	19
Quillback *(Sebastes maliger)*	32,455	61%	16
Yelloweye *(Sebastes ruberrimus)*	4,372	8%	16
Other *(Sebastes* spp.*)*	5,643	11%	
Total	53,320		

Along with the 53,320 rockfish harvested in 2000, an additional 30,335 rockfish were released (Table 9). An additional catch of 40,261 shellfish were harvested (Table 11). The shellfish catch consisted of 60% oysters, 21% prawns, 13% clams and 6% crabs.

The CPUE for rockfish (Table 13, Fig. 16 and 17) was relatively constant throughout the creel survey period and averaged 0.33 fish per boat trip, while the CPUE for halibut was 0.003 and lingcod was 0.04 fish per boat trip (Table 13). The CPUE for all non-salmon species and for total finfish during 2000 was 0.58 and 0.90, respectively (Table 13).

BIOLOGICAL DATA

Percentage and Catch of Adipose-clipped Chinook and Coho

In 2000, 2,517 chinook and 266 coho were examined for adipose-clips. Tables 14 and 16 show for chinook and coho respectively, the number of clips observed and the total fish inspected by month and region. The data were presented by Region since some Statistical Areas had insufficient numbers of fish examined for clips in some months, and those data were included with other Areas. Three Regions were defined: the Northern Gulf represented by Areas 13-16; the South Gulf represented by Areas 17, 18, 28 and 29 and the Victoria region represented by Area 19.

Among chinook examined for adipose-clips, 6.8% had clips. The observed proportion of chinook adipose-clips was 9.5% for Victoria region, 8.3% for South Gulf and 3.3% for the North Gulf (Table 14). Among coho examined, 86% had adipose clips. There was a large increase in coho catch in 2000 primarily from adipose-clipped only fisheries in select terminal areas, the high percent (86%) of adipose-clips reflect the fishery. Monthly catch estimates of adipose-clipped chinook and coho are shown by Region in Tables 15 and 17.

From the Strait of Georgia fishery, a total of 525 chinook with adipose-clips were returned to the head recovery program for coded-wire tag (CWT) extraction and decoding. The CWT data show that the main contributing rivers from the United States were the Wallace River (70), Cascade River from Marblemount hatchery (38) and Kendall Creek (30; Table 18). Canada's main contributing rivers were the Nanaimo and Cowichan Rivers both at 34 recovered CWTs, the Chemainus River (31), Puntledge (25), Chehalis (21) and the Shuswap (19; Table 18).

Catch-At-Age for Chinook

During 2000, 2,662 chinook were sampled for length, 909 of these chinook were also sampled for age analysis. Of this total, 767 fish were found to have accurate ages (142 samples lost to regenerated scales, marine annuli, etc.). Table 19 shows the monthly number and percent age composition of chinook sampled for age. All ages shown in this report represent the saltwater age. The age data are summarised graphically in Figure 18. The monthly age proportions were applied to the estimated monthly chinook catches to provide a breakdown by age group (Table 20).

In 2000, the chinook sport catch in the Strait of Georgia consisted primarily of age 3 fish (56.6%), followed by age 4 fish (35.0%), age 5 fish (6.2%) and age 2 fish (2.2%). The age composition and catch at age shifts from age 4 chinook (Jan to May) to age 3 chinook for the remainder of the year (Table 19, 20 and Figure 18).

	% Age Composition of Chinook				
Catch Year	2	3	4	5+	Reference
1983	57.1	25.5	14.2	3.1	Shardlow et al. (1989a).
1984	21.6	67.3	9.4	1.7	Shardlow and Collicutt (1989a)
1985	6.6	70.8	20.6	2.0	Shardlow and Collicutt (1989b)
1986	10.9	44.9	40.4	3.8	Shardlow and Collicutt (1989c)
1987	7.8	62.1	25.0	5.2	Shardlow and Collicutt (1989d)
1988	26.4	35.3	35.4	2.8	Shardlow and Collicutt (1989e)
1989	3.1	83.3	10.5	3.1	Collicutt and Shardlow (1990)
1990	4.0	37.0	53.0	6.0	Hardie et al. 1999
1991	2.0	67.0	25.0	6.0	Hardie et al. 1999
1992	7.0	58.0	28.0	7.0	Hardie et al. 1999
1993	1.0	69.0	26.0	4.0	Hardie et al. 1999
1994	2.0	50.0	40.0	8.0	Hardie et al. 1999
1995	2.0	62.0	29.0	7.0	Hardie et al. 1999
1996	1.0	70.0	26.0	3.0	Hardie et al. 1999
1997	0.0	66.0	29.0	5.0	Hardie et al. 1999
1998	5.0	31.0	55.0	9.0	Hardie et al. 1999
1999	0.3	73.4	21.4	4.9	Hardie et al. 2001
2000	2.2	56.6	35.0	6.2	*

*Calculated from this report's yearly catch estimates

Mean Length-At-Age for Chinook

Table 21 shows the monthly mean nose-fork length at age for the 767 chinook for which both length and age data were available. Figure 19 shows the length frequency distribution for all the measured chinook. The overall mean length for age 3 fish was 666.8 mm and age 4 fish was 736.9 mm (Table 21). The largest salmon sampled were two 107 cm chinook at Painters Marina (Area 13).

As shown below, there was a minimal increase in the percentage of sub-legal size chinook (45 cm in the Victoria area and 62 cm in the Strait of Georgia). This percentage (number of under size chinook divided by the total chinook sampled for the area) has dropped and remained low since it's highest level in 1989 when the 62 cm size limit was implemented.

Year	Sub-legal Chinook Victoria	Strait of Georgia	Reference
1989	2%	20%	Collicutt and Shardlow, 1990
1990	0.01	10%	Collicutt and Shardlow, 1992
1991	<1%	7%	Collicutt and Shardlow, 1993
1992	0.02	2%	Hardie et al. 1999
1993	1%	2%	Hardie et al. 1999
1994	0%	2%	Hardie et al. 1999
1995	0%	3%	Hardie et al. 1999
1996	0%	1%	Hardie et al. 1999
1997	0%	2%	Hardie et al. 1999
1998	1%	6%	Hardie et al. 1999
1999	0%	<1%	Hardie et al. 2001
2000	1%	2%	This report

Length Frequency Distribution for Coho

Figure 20 shows the length frequency distribution for the 186 coho sampled in 2000. The mean size of coho in 2000 was 53.2 cm, which is a decrease in coho size from 1999; however 1999 had the lowest number of coho caught and biosampled in the history of the Strait of Georgia creel survey. In the 1989 report (Collicutt and Shardlow 1990), an overall decline from 1986 to 1989 in the size of landed coho was noted. A similar size reduction trend appeared to be occurring once again in 1996 to 1998, as shown below:

Year	Coho mean annual length Mean Length	Sample Size	
1986	53.4	5354	
1987	50.5	4997	
1988	50.0	13000	
1989	49.6	6883	
1990	51.4	8959	
1991	54.2	2281	
1992	53.2	19602	92 to 97 Unpublished reports
1993	51.0	22203	
1994	53.7	5890	
1995	56.3	1672	
1996	53.0	2257	
1997	49.7	1710	
1998	49.0	60	Hardie et al. 1999
1999	58.7	51	Hardie et al. 20001
2000	53.2	186	This report

SUMMARY

A sport fishery creel survey was conducted in the Strait of Georgia in 2000 to estimate the catches of all the important recreational finfish species and the total sport fishing boat trips. In the report, data are presented by both month and Statistical Areas. Comparisons are made to previous data to determine trends in catch and effort. From the catch and effort estimates, CPUE could be calculated. These data also provide estimates of the number of chinook and coho salmon with adipose fin clips. Also the age composition of chinook and the length frequency distributions of chinook and coho are shown.

Fishing effort had dropped 76% from a high of 664,517 boat trips in 1988 to a low of 162,296 in 1998. The 2000 season has shown a minor decrease of 1.8% in effort from 1999 to 158,404 boat trips. Total salmon catch decreased 31% from 71,614 to 49,752 and chinook catch also decreased from 43,558 in 1999 to 28,226 in 2000. Total salmon CPUE decreased from 0.44 in 1999 to 0.31 in 2000.

For the entire year 2000 creel survey period (April to October plus an entire 12 months for Statistical Area 19), sport fishers made an estimated 170,798 boat trips in the Strait of Georgia. A total of 19,159 boating parties, of which 13,480 were actively fishing, were interviewed at a monthly maximum of 35 landing sites in the Strait of Georgia Creel Survey area. This sampling represents approximately 11.2% of the total number of boat trips conducted by sport fishers in the Strait of Georgia in 2000. A total of 47 overflights were also conducted to take "snapshot" counts of fishing effort.

Sport fishers in the Strait of Georgia landed an estimated total yearly finfish catch of 150,803 pieces of which 37% were salmon and 63% were groundfish. The 56,130 landed salmon consisted of 32,750 chinook, 4,678 coho, 2,558 chum, 9,771 pink salmon and 6,367 sockeye salmon. Anglers released an additional 148,224 salmon of mixed species. The 94,673 landed groundfish consisted of 543 halibut, 6,127 lingcod, 54,881 rockfish and 165 other finfish

During the creel comparison period of April to September, Sport fishers in the Strait of Georgia landed an estimated total finfish catch of 141,932 pieces. The 49,752 landed salmon consisted of 28,226 chinook, 4,294 coho, 1,099 chum, 9,761 pink salmon and 6,367 sockeye salmon. Anglers released an additional 136,661 salmon of mixed species. The 92,180 landed groundfish consisted of 496 halibut, 6,116 lingcod, 53,320 rockfish and 19 other finfish

Among salmon examined for adipose-clips, 6.8% of chinook and 86% of coho had adipose-clips. The majority of chinook sport catches in 2000 consisted of age 3 fish (56.6%), followed by age 4 fish (35.0%), age 5 fish (6.2%) and age 2 fish (2.2%). Of the total chinook measured in 2000, 1% were sub-legal in size. The mean yearly size of coho was 53.2 cm.

PART 2

NORTHERN VANCOUVER ISLAND

INTRODUCTION

Part 2 of this report documents the 2000 catch and effort statistics for the Northern Vancouver Island sport fishery. The Northern Vancouver Island access point creel survey follows the methodology of the Strait of Georgia creel survey for objectives, study design, data collection and data analysis. The following text in Objectives and Methods contain only the differences between the two creel surveys. A list of previous reports in this series may be found in Appendix A. In this report all tables, figures and appendices are located at the end of the text.

BACKGROUND

The study area is located on the north-eastern coast of Vancouver Island (Fig. 21), consisting of Queen Charlotte and Johnstone Straits. The area is approximately 80 km wide by 110 km long, the creel survey study area was divided into 5 sub areas, 12A to 12E. The major fishing areas include Gordon Channel, Hardy Bay, Broughton Strait, Blackfish Sound, Baronet Passage, Knight Inlet, Tribune Channel, and Sutlej Channel. Statistical Sub Area 12D was not covered in 2000 due to the cost of an isolated access point and extended float plane over flights for boat counts. In 1999, 12D contained only 1.8% of the total effort for Area 12 and 1.5% of the total salmon catch (Hardie et al. 2001).

The 2000 creel survey ran for July and August. The most sought after species in the Northern Vancouver Island recreational fishery were the chinook (*Oncorhynchus tshawytscha*) and coho (*O. kisutch*) salmon, but with the closure of coho (1998), pink salmon (*O. gorbuscha*) has replaced coho as a primary target species. Significant fisheries are also directed at sockeye (*O. nerka*), rockfish (*Sebastes spp.*) and halibut (*Hippoglossus stenolepis*).

The 2000 creel survey showed a decrease in estimated fishing effort of 51%. Fishing effort of 32,443 boat trips in July and August 1999 decreased to 15,934 boat trips in 2000 for the same period. The average aerial count of boats actively fishing in August 1999 was 304 and in 2000 the count was 154. The catches also reflect the decrease in fishing effort, 4,628 chinook, 23,519 pink salmon and 1,524 halibut were caught and an additional 9,626 released coho (Table 22). The 1999 creel survey estimated (July and August only) 7,259 chinook, 42,398 pink, 6,117 halibut and 22,604 released coho (Hardie et al.2001).

OBJECTIVES

The objectives of the 2000 Northern Vancouver Island creel survey are contained in Part 1 Strait of Georgia objectives.

METHODS

STUDY DESIGN

The design of the 2000 Northern Vancouver Island Creel Survey was similar to that used for the 2000 Strait of Georgia Creel Survey, with some modifications to the data analysed, sampling intensity, flight routes and data processing.

The fishery was stratified according to the following criteria:

1. Month. The survey operated for July and August.

2. Geographic area. Catch and effort estimates were produced for statistical sub-areas 12A, 12B, 12C and 12E (Fig. 21).

3. Day type. Weekend and mid-week days were considered independently because sport fishing activity is known to differ for the two types of days.

4. Time of day. Sampling shifts (one shift is a set number of consecutive hours of interviewing anglers at one site by one creel surveyor) were conducted during set time periods. From June to September sampling was conducted during either an early shift (approximately 0700 to 1500 hours) or a late day shift (approximately 1500 to 2300 hours).

4. Guided versus unguided anglers. Certain sites are known to have primarily guided fishing effort. Unpublished data from previous surveys in this series confirm that the CPUE from guided boats differs markedly from unguided boats. Effort was made to document guided vs. unguided; however the catch estimate program has no allowances for guided versus non-guided.

Allocation of sampling effort among months followed the same general pattern as fishing effort (Fig. 22), that is, more effort was allocated during August when fishing effort is at its highest. Shifts were divided equally among weekend and mid-week days and early and late daily time periods.

D.F.O. conducted data collection, data entry, preliminary processing and generated estimations of the catch and effort statistics.

DATA COLLECTION

Angler Interviews

Surveyors were stationed at access points for scheduled shifts to interview anglers as they returned from fishing. For each boating party landing, the following questions were asked and information was recorded (Fig. 2).

In 2000, interviews were conducted each month at six sites, Echo Bay, Telegraph Cove, Alder Bay, the public ramp and the Quarterdeck Marina in Port Hardy and the Port McNeill ramp. For each area - day type - work block stratum, sampling shifts at a site were chosen on a near random basis from the total number of shifts available. For definition of the above terms (day type, work block, shift) see Appendix C.

Two main sources of potential bias may exist for this survey: non-representative sampling and analytical method. All of the high volume access points were identified and sampled through this survey to minimise the potential of non-representative sampling bias. Some active remote resorts (Farewell Harbour Resort, Double Bay Resort) in the Blackfish Sound area were not sampled for logistical reasons, however, the fishery in this area was represented through data collected at Telegraph Cove and Alder Bay sites. Potential bias occurs through analytical methodology when access point data cannot be highly associated with a specific sub-area (or sub-area group). For this survey access point data and sub-areas were associated using mapping analysis which indicated a very high degree of association for each site sub-area used minimising the potential for bias from this source. Fishing interviews from landings to the Quarterdeck Marina and public ramp in Port Hardy showed that 100% of the fishing activity occurred in sub-area 12A. Landings at Telegraph Cove showed 63% activity in sub-area 12C and 32% activity in sub-area 12B. Fishing activity in Alder Bay was split with 57% in sub-area 12C and 41% in sub-area 12B. Port McNeill showed 69% fishing activity from sub-area 12B and 24% in sub-area 12C. Sub-area 12E showed 84% of the fishing activity for Echo Bay.

Aerial Overflights

Aerial surveys, conducted from airplanes travelling along a pre-defined 440 km route (Fig. 23), allowed observers to count vessels actively sport fishing throughout the Northern Vancouver Island. During the creel survey period 11 flights were conducted in 2000.

DATA ANALYSIS

Methods and equations are contained in Appendix C.

RESULTS AND DISCUSSION

DISTRIBUTION OF SAMPLING EFFORT

A total of 2,052 interviews, of which 1,861 involved actively fishing anglers, and 11 overflights were conducted in 2000. The monthly distribution of interviews generally reflected the monthly distribution of fishing effort (Table 23, Fig. 22). The total interviews represent 12.9% of the estimated total fishing effort (15,934 boat trips) for the

entire study area (Table 22). The interviews involving actively fishing anglers represent 11.7% of the total fishing effort.

SPORT FISHING EFFORT AND CATCH

The 2000 Northern Vancouver Island sport fishing catch and effort statistics are summarised for each species by month (Tables 23, 25, 27, 29 and 31) and by statistical area (Tables 24, 26, 28, 30, 32). Appendix I and J give catch and effort by month and statistical sub-area.

Angler effort decreased in 2000 by 51% from 32,443 boat trips in 1999, to 15,934 boat trips in 2000. The August 2000 aerial boat counts which aid in the creel survey estimation program also decreased by 50% when compared to the August 1999 counts.

The total finfish sport catch in the Northern Vancouver Island was estimated at 44,845 pieces, including steelhead and cutthroat trout (Table 22) and consisted of 65% salmon and 35% groundfish. Anglers released an additional 14,530 chinook and coho salmon.

The major regulation change, which affected the 2000 sport fishery was the large area closures on the West Coast of Vancouver Island, July 15 and August 1, 2000. The closure areas changed from no fishing outside of one mile, to a conservation corridor for Areas 21 to 25 with no fishing from the surfline to one nautical mile offshore. This closure was in effect to conserve west Coast Vancouver chinook stocks. Regulation changes introduced in 1998 and which remain in affect are:

1. Only barbless hooks were to be used when fishing for salmon, throughout the coast.
2. Non-retention of coho in all B. C. tidal and non- tidal waters was enforced with the exceptions of a few selected terminal fisheries such as the mouth of the Capilano River (Statistical Area 28), a portion of Sechelt Inlet (Area 16), the Big Qualicum River (Area 14) and Sooke (Area 19). Coho daily limits were two with a possession limit of four; minimum size was 41 cm.

General regulations included a minimum size limit for chinook of 62 cm, with a daily limit of two, possession of four, and an annual limit of 15 for the Strait of Georgia (Cape Sutil to Cadboro Bay). In a portion of Statistical Area 19 (Cadboro Bay to Sheringham Pt.), the minimum size limit for chinook was 45 cm, with a daily limit of two, possession of four, and an annual limit of 20. See appendix F for a historical synopsis of regulation changes.

Salmon

Salmon sport catches for the Northern Vancouver Island decreased 44% from 52,227 in 1999 to 29,172 pieces in 2000 (Table 22). The catch consisted of 16% chinook, 81% pink and 3% sockeye salmon.

In 2000, anglers kept 4,628 chinook, 103 chum, 23,519 pink and 744 sockeye salmon (Tables 23 and 24, and Fig. 25), coho remained closed to retention. The average catch efficiency varied, chinook at 0.29, chum 0.01, pink 1.48 and sockeye at 0.05 (Table 33). The average boat trip caught 1.83 salmon, as compared to 1.60 in 1999. August was the peak month for salmon fishing with a CPUE of 2.07 (Table 33, Figures 24 and 25).

The fishing effort was evenly distributed through Statistical Area 12 in 2000, Sub-Area 12C had 31% of angler effort, Sub-Area 12A had 30%, 12B had 28% and the remaining 10% was in Sub-Area 12E (Table 24). Sub-Area 12C contained 53% of the total salmon catch and 12B and 12A contained 21% and 20% respectively (Table 24). Appendix I shows salmon catch and effort by month and sub-area.

The non-retention of coho for the 2000 sport fishing season continues to alter the catch estimates. Previously a significant coho fishery occurred in the Northern Vancouver Island with 25,873 retained in 1993 (access point survey April to the end of August). In 2000, anglers released 9,626 coho as compared to 22,604 coho in 1999 and 27,247 coho in 1998. For the first time since the closure of the coho retention fishery, pink salmon released (12,606) was greater than the number of released coho (9,626; Tables 23 and 24).

Groundfish

The 2000 Northern Vancouver Island catch consisted of 15,673 groundfish, which made up 35% of the overall catch. The species composition of the groundfish catch, based on the Tables 25 and 27 data, is shown below. The category "other" groundfish consists of starry flounder (*Platichthys stellatus*), rock sole (*Lepidopsetta bilineata*), dogfish (*Squalus acanthias*), cabezon (*Scorpaenichthys marmoratus*), greenling (*Hexagrammos spp.*) and other unidentfied sole and groundfish.

Groundfish Species	Catch	% of Total Groundfish Catch	Major Catch Area
Halibut *(Hippoglossus stenolepis)*	1,524	10%	12B
Lingcod *(Ophiodon elongatus)*	1,066	7%	12B
Other Groundfish	4,124	26%	12B
Rockfish *(Sebastes* spp.)	8,959	57%	12B
	15,673		

The groundfish catch was evenly distributed between July and August (Tables 25 and 27). Catch by Statistical Sub-Area for all groundfish was highest in 12B (Tables 26 and 28). Appendix J shows groundfish catch and effort by month and Sub-Area.

Rockfish species were identified for the entire survey area in 2000, catch and release estimates were generated for nine species (Tables 27, 28, 29 and 30). The major catches are shown below. The "other" rockfish category consists of canary (*Sebastes pinniger*), china (*S. nebulosus*), redstripe (*S. proriger*), tiger (*S. nigrocinctus*) and unidentified species.

Rockfish Species	Catch	% of Total Rockfish Catch	Major Catch Area
Black	1,232	13.8%	12A
Copper	733	8.2%	12B
Quillback	4,351	48.6%	12B
Yelloweye	1,486	16.6%	12B
Other	1,157	12.9%	12B
	8,959		

The CPUE for rockfish was relatively constant throughout the creel survey period and averaged 0.56, while the CPUE for halibut was 0.10 and lingcod was 0.07 (Table 33). The CPUE for all total finfish during was 2.81 (Table 33).

BIOLOGICAL DATA

Percentage and Catch of Adipose-clipped Chinook and Coho

In 2000, 524 chinook were examined for adipose-clips (Table 34). Among chinook examined, 2.1% had adipose clips. A total catch of 101 clipped chinook was estimated for Northern Vancouver Island in 2000 (Table 35).

Catch-At-Age for Chinook

During 2000, 392 chinook biological samples were collected for age and length analysis. Table 36 shows the monthly number and percent age composition of chinook sampled for age. All ages shown in this report represent the saltwater age. The age data are summarised graphically in Figure 26. The monthly age percentages were applied to the estimated monthly chinook catches to provide a breakdown by age group (Table 37).

In 2000, the chinook sport catch in Northern Vancouver Island consisted primarily of age 4 fish (57.1%), followed by age 3 fish (28.0%) and age 5+ (14.3%) (Table 37). Age 4 fish were the dominant component of the catch throughout the year with age 3 fish primarily making up the remainder of the catch (Tables 36 and 37).

Mean Length-At-Age for Chinook

Table 38 shows the monthly mean nose-fork length at age for the 392 chinook for which both length and age data were available. Figure 27 shows the length frequency distribution for all the measured chinook. The overall mean length for age 3 fish was 74.0 cm, age 4 fish was 83.0 cm and age 5 fish was 95.1 cm (Table 38). Two age 6 fish were sampled in 2000, their average size was 100.0 cm (Table 38).

SUMMARY

A sport fishery creel survey was conducted in the Northern Vancouver Island in 2000 to estimate the catches of all the important recreational finfish species and the total sport fishing boat trips. In the report, data are presented by both month and Statistical Sub-Area. From the catch and effort estimates CPUE could be calculated.

The downward trend in fishing effort and catch of the main target species was evident again in 2000. Fishing effort decreased 51% from 32,443 (1999) to 15,934 (2000). Total salmon catch also decreased by 44% from 52,227 (1999) to 29,172 in 2000.

Sport fishers made an estimated 15,934 boat trips in the Northern Vancouver Island. A total of 2,052 boating parties, of which 1,862 were actively fishing, were interviewed at six landing sites in the Northern Vancouver Island creel survey area. This sampling represents approximately 12.9% of the total number of boat trips conducted by sport fishers in the Northern Vancouver Island. A total of 11 overflights were also conducted during the creel survey period.

Sport fishers in the Northern Vancouver Island landed an estimated total finfish catch of 44,845 pieces of which 65% were salmon and 35% were groundfish. The 29,172 landed salmon consisted of 4,628 chinook, 103 chum, 23,519 pink salmon and 744 sockeye salmon. Anglers released an additional 4,904 chinook and 9,626 coho salmon. CPUE averaged 1.83 for salmon (all species), 0.42 for groundfish and 2.81 for total finfish. The 15,673 landed groundfish consisted of 1,524 halibut, 1,066 lingcod, 8,959 rockfish and 4,124 other finfish.

Among chinook salmon examined 2.1% had adipose clips. The majority of chinook sport catches in 2000 consisted of age 4 fish (57.1%), followed by age 3 fish (28.0%) and age 5+ (14.8%). The mean annual length of chinook at age 3 was 74.0 cm, age 4 was 83.0 cm and age 5 was 95.1 cm.

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TABLES

Table 1. Number of fishing interviews by month and Statistical Area and number of overflights by month for Northern Vancouver Island and the Strait of Georgia Creel Surveys, 2000.

Month	Statistical Area												
	12	Area 12 Over Flights	13	14	15	16	17	18	19	28	29	S of G Total	S of G Over Flights
Jan-Mar									825			825	24
Apr			65	74		45	88	30	241	37	29	609	4
May			133	103	4	134	161	39	441	54	65	1134	6
Jun			492	263	14	168	400	43	529	75	60	2044	6
Jul	966	6	1111	321	7	222	446	55	762	99	101	3124	8
Aug	895	5	1034	637	2	158	413	87	784	80	71	3266	7
Sep			438	242	2	113	149	75	372	50	113	1554	6
Oct			234	37			23		252			546	10
Nov-Dec									378			378	12
Total	1927	11	3507	1677	29	840	1680	329	4584	395	439	13480	83

Table 2. Tidal effort estimates and sport catches for the Strait of Georgia, 1983 to 2000. (This table uses values from April up to and including September for historical comparisons. See Appendix E-1 for total effort and catch estimates for 1982 to 2000. See Appendix E-2 for historical effort and catch estimates from 1960 to 1982).

		Salmon Catch*						Salmon Released			Groundfish Catch				
Year	Effort	Chinook	Coho	Chum	Pink	Sockeye	Total Salmon	All Chinook	All Coho	All Salmon	Halibut	Lingcod	Rockfish	Dogfish	Other
1983	495756	150522	382905	0**	53129	0**	592546	0**	0**	633444	0**	68170	183493	4226	62662
1984	595998	333726	432535	0	10080	0	778403	0	0	575704	0	129550	144174	4552	69194
1985	576885	205113	715061	0	90498	0	1015445	0	0	639402	0	73957	121681	4336	46392
1986	523272	154807	550726	613	3138	873	710391	0	0	111346	0	67126	152391	5108	52333
1987	525047	100139	621749	682	89833	8491	822645	0	0	949611	0	60752	121297	3810	39100
1988	590389	90491	1042504	663	8692	16273	1160361	0	0	813689	0	61565	174709	3669	54775
1989	532968	103877	472627	3329	122859	13345	717364	181537	0	1090925	0	46225	176380	3504	30639
1990	497550	90768	602352	652	11549	30606	741051	187554	0	638406	0	31092	142797	2259	24622
1991	409376	101690	126852	888	248976	23401	502140	153687	0	545160	0	8116	150524	3324	17532
1992	422088	100343	571459	843	19077	6745	698645	143967	0	370783	0	5733	124339	1677	27109
1993	480747	113123	823694	1766	172713	23600	1163190	172690	0	507602	0	6756	98134	1893	30240
1994	423622	63456	278890	289	18453	14036	383031	136863	0	375805	0	6793	149668	1244	31888
1995	306849	59084	73080	1481	183859	5897	328628	109868	0	303500	0	4743	107379	1873	26686
1996	289423	89589	127890	3474	7887	2419	233469	180238	0	366379	0	3733	102818	1497	39786
1997	258280	55554	98553	481	111003	16819	285533	63951	0	375728	0	4009	85701	2528	51380
1998	158559	20536	1376	3556	6848	4474	37994	34294	20570	2340	2125	3283	81591	0**	43404
1999	161316	43559	315	791	26456	492	71614	60022	13022	101384	2489	3691	65681	0	13793
2000	158404	28226	4294	1099	9761	6367	49752	52576	35086	136661	496	6116	53320	1863	***23

*Catch and effort estimates: 1983 to 1992 from prior annual reports (see Appendix A), 1993 to 1997 from unpublished creel survey data.

** A zero in a species column indicates that no catch estimates were generated for that species for that year.

***Other catch has dropped because of more accurate catch recording in the creel survey and more inclusive species catch estimates, other catch has been more accurately put into total groundfish, rockfish and shellfish categories.

Table 3. Salmon catches and effort by species and month for the Strait of Georgia, 2000.

Month	Value	Effort (Boat Trips)	Salmon Catch						Salmon Released							
			Chinook	Chum	Coho	Pink	Sockeye	Total Salmon	*Legal Chinook	**Sub-legal Chinook	Legal Coho	Sub-legal Coho	Chum	Pink	Sockeye	Total Salmon
Jan -	Total	2778	1794	0	0	0	0	1794	735	957	1	10	0	0	0	1701
Mar	STD	329	250	0	0	0	0	250	132	123	1	11	0	0	0	223
Apr	Total	10332	1034	0	0	0	0	1034	320	1497	8	498	0	0	0	2334
	STD	1251	267	0	0	0	0	267	146	316	9	247	0	0	0	463
May	Total	7882	1072	0	14	0	0	1086	159	772	353	1379	0	0	0	2678
	STD	1013	283	0	21	0	0	291	87	247	324	710	0	0	0	1164
Jun	Total	26498	5178	0	58	3	23	5263	451	3307	737	2379	0	3	0	6988
	STD	1672	597	0	44	4	24	601	131	517	353	580	0	4	0	1150
Jul	Total	37056	6352	17	1407	3525	3330	14634	196	8997	2089	4309	6	1071	391	22593
	STD	1535	512	17	309	771	776	1753	93	955	317	656	6	389	117	1698
Aug	Total	48083	11512	82	1516	5609	2925	21644	511	24160	5401	6481	0	1920	77	63888
	STD	2506	1027	43	238	917	540	1792	148	2650	780	750	0	563	35	5735
Sep	Total	28553	3078	1000	1299	624	89	6091	667	11539	6443	5009	34	716	0	38180
	STD	1557	406	289	231	203	51	635	247	1594	837	845	34	683	0	3346
Oct	Total	5706	434	1459	337	10	0	2240	6	1118	829	1808	34	0	0	7060
	STD	614	102	365	110	11	0	425	7	164	185	539	31	0	0	944
Nov -	Total	3910	2296	0	47	0	0	2344	389	2115	24	107	0	0	0	2802
Dec	STD	484	433	0	48	0	0	434	117	360	24	55	0	0	0	436
	Total	170798	32750	2558	4678	9771	6367	56130	3434	54462	15885	21980	74	3710	468	148224
	STD	4143	1500	468	471	1215	947	2763	411	3328	1294	1704	46	967	122	7141

*Legal: The salmon was equal to or greater in length than the legal size limit.
**Sub-legal: The salmon was less than the legal size limit.

Table 4. Salmon catches and effort by species and Statistical Area for the Strait of Georgia, 2000.

Area	Value	Effort (Boat Trips)	Salmon Catch						Salmon Released							
			Chinook	Chum	Coho	Pink	Sockeye	Total Salmon	Legal Chinook	Sub-legal Chinook	Legal Coho	Sub-legal Coho	Chum	Pink	Sockeye	Total Salmon
13	Total	40512	10217	2529	993	9518	5113	28369	665	8538	12475	2473	68	3378	142	36146
	STD	1998	786	467	189	1213	921	2379	170	790	1167	584	46	959	80	2587
14	Total	24201	5522	5	61	3	19	5611	266	12458	507	3915	0	205	0	38229
	STD	2120	881	7	33	4	15	884	108	2144	169	760	0	109	0	5264
15	Total	3348	680	0	10	0	0	690	101	5105	226	405	0	0	0	5838
	STD	345	154	0	7	0	0	154	66	643	83	99	0	0	0	739
16	Total	16470	873	0	6	0	0	879	59	5860	78	673	0	0	0	6765
	STD	1321	199	0	7	0	0	200	31	1545	39	270	0	0	0	1585
17	Total	17269	1655	0	9	9	0	1674	248	3196	3	2001	6	9	0	17733
	STD	1156	207	0	6	6	0	207	126	352	3	353	6	6	0	1713
18	Total	8588	1042	0	0	2	0	1044	251	3216	62	684	0	0	0	7030
	STD	993	238	0	0	1	0	238	210	865	65	423	0	0	0	1860
19	Total	44087	10902	24	579	239	932	12679	1728	8811	2123	8904	0	97	326	25543
	STD	1894	761	18	154	70	180	851	243	796	508	1160	0	59	92	2244
28	Total	9707	749	0	2762	0	78	3590	102	1814	380	2218	0	18	0	4663
	STD	659	153	0	396	0	43	444	59	291	122	420	0	17	0	596
29	Total	6616	1110	0	258	0	225	1594	14	5464	31	707	0	3	0	6277
	STD	687	301	0	71	0	126	337	3	1211	4	273	0	1	0	1320
	Total	170798	32750	2558	4678	9771	6367	56130	3434	54462	15885	21980	74	3710	468	148224
	STD	4143	1500	468	472	1215	948	2764	410	3328	1294	1703	46	967	122	7141

Table 5. Groundfish catches and effort by species and month for the Strait of Georgia, 2000.

Month		Effort (Boat Trips)	Groundfish Catch							Groundfish Released						
			Halibut	Lingcod	Herring	English sole	Floun	Other Grndfish	Total Grndfish	Halibut	Lingcod	Herring	English sole	Floun	Other Grndfish	Total Grndfish
Jan _	Total	2778	14	0	0	3	0	0	225	0	424	0	0	0	0	636
Mar	STD	329	11	0	0	3	0	0	116	0	97	0	0	0	0	135
Apr	Total	10332	42	34	0	87	0	0	4716	97	4233	0	0	0	819	6781
	STD	1251	36	25	0	92	0	0	1800	99	1132	0	0	0	243	1507
May	Total	7882	190	69	0	22	0	29	2954	1	2453	0	1	0	109	4243
	STD	1013	57	35	0	25	0	13	679	2	412	0	2	0	29	609
Jun	Total	26498	93	1576	0	191	0	43	6760	0	10107	0	23	0	539	26700
	STD	1672	67	508	0	202	0	25	1038	0	1608	0	25	0	202	3122
Jul	Total	37056	74	1424	0	0	0	5	12242	12	11273	8	0	0	219	29155
	STD	1535	43	191	0	0	0	5	1981	12	1114	7	0	0	72	2207
Aug	Total	48083	65	2596	0	50	0	10	7140	11	7384	0	0	0	466	21875
	STD	2506	29	433	0	54	0	10	854	13	773	0	0	0	119	1731
Sep	Total	28553	32	417	0	5	0	94	5029	22	5220	0	0	0	708	13029
	STD	1557	28	141	0	4	0	65	1067	11	717	0	0	0	349	1351
Oct	Total	5706	13	11	0	4	0	0	317	6	695	0	0	0	55	965
	STD	614	15	8	0	4	0	0	127	7	224	0	0	0	38	251
Nov -	Total	3910	20	0	0	43	0	0	244	9	548	0	0	0	0	637
Dec	STD	484	23	0	0	51	0	0	122	8	149	0	0	0	0	168
	Total	170798	543	6127	0	405	0	181	39627	158	42337	8	24	0	2915	104021
	STD	4143	116	710	0	235	0	72	3258	102	2544	7	25	0	493	4711

Table 6. Groundfish catches and effort by species and Statistical Area for the Strait of Georgia, 2000.

Area	Effort (Boat Trips)	Groundfish Catch							Groundfish Released						
		Halibut	Lingcod	Herring	English sole	Floun	Other Grndfish	Total Grndfish	Halibut	Lingcod	Herring	English sole	Floun	Other Grndfish	Total Grndfish
13 Total	40512	26	985	0	0	0	41	2161	97	6575	0	0	0	427	26876
STD	1998	16	194	0	0	0	23	321	99	841	0	0	0	118	2220
14 Total	24201	18	925	0	0	0	29	2886	19	6313	0	0	0	825	12538
STD	2120	12	192	0	0	0	19	528	16	975	0	0	0	253	1532
15 Total	3348	0	22	0	0	0	0	184	0	745	2	0	0	0	1780
STD	345	0	9	0	0	0	0	56	0	178	1	0	0	0	307
16 Total	16470	0	1240	0	0	0	0	15213	0	5736	6	0	0	605	17101
STD	1321	0	374	0	0	0	0	2674	0	976	7	0	0	195	2304
17 Total	17269	0	1097	0	0	0	92	3701	0	4204	0	0	0	462	10304
STD	1156	0	195	0	0	0	62	431	0	531	0	0	0	109	934
18 Total	8588	2	202	0	11	0	0	1516	9	1560	0	0	0	326	3380
STD	993	1	45	0	11	0	0	675	4	287	0	0	0	327	573
19 Total	44087	497	1173	0	394	0	0	6872	33	15821	0	24	0	159	26919
STD	1894	114	490	0	235	0	0	965	17	1849	0	25	0	87	2801
28 Total	9707	0	354	0	0	0	19	5657	0	934	0	0	0	32	2819
STD	659	0	91	0	0	0	22	1193	0	194	0	0	0	20	501
29 Total	6616	0	129	0	0	0	0	1437	0	449	0	0	0	79	2304
STD	687	0	30	0	0	0	0	294	0	86	0	0	0	24	462
Total	170798	543	6127	0	405	0	181	39627	158	42337	8	24	0	2915	104021
STD	4143	116	710	0	235	0	72	3258	102	2544	7	25	0	493	4711

Table 7. Rockfish catches and effort by species and month for the Strait of Georgia, 2000.

Month		Effort	Rockfish Catch, kept									
			Black	Canary	Copper	China	Quillback	Redstripe	Tiger	Yellow eye	Yellow tail	All Rockfish
Jan -	Total	2778	0	0	221	0	7	0	0	0	0	227
Mar	STD	329	0	0	98	0	4	0	0	0	0	98
Apr	Total	10332	0	40	873	92	3587	0	24	575	0	5236
	STD	1251	0	35	361	51	1183	0	18	285	0	1543
May	Total	7882	37	67	536	67	1880	1	0	173	0	3158
	STD	1013	36	44	170	35	396	1	0	55	0	521
Jun	Total	26498	91	128	1960	18	4905	6	0	623	10	8777
	STD	1672	54	54	403	12	630	6	0	151	8	921
Jul	Total	37056	89	0	2242	17	6232	0	0	1031	0	10506
	STD	1535	45	0	399	9	755	0	0	140	0	1010
Aug	Total	48083	11	140	3698	7	12159	10	20	1294	0	19393
	STD	2506	8	103	1252	7	1859	10	20	227	0	2601
Sep	Total	28553	9	0	1304	50	3692	9	23	676	0	6250
	STD	1557	8	0	273	43	589	11	24	253	0	883
Oct	Total	5706	0	0	111	0	558	0	0	0	8	716
	STD	614	0	0	67	0	179	0	0	0	9	228
Nov -	Total	3910	54	0	246	3	316	0	0	0	0	618
Dec	STD	484	59	0	170	4	192	0	0	0	0	326
	Total	170798	291	375	11191	254	33336	26	67	4372	18	54881
	STD	4143	99	129	1472	77	2529	16	36	492	12	3498

Table 8. Rockfish catches and effort by species and Statistical Area for the Strait of Georgia, 2000.

Area	Effort	Rockfish Catch									
		Black	Canary	Copper	China	Quillback	Redstripe	Tiger	Yellow eye	Yellow tail	All Rockfish
13 Total	40512	0	27	937	41	9208	17	67	380	0	10967
STD	1998	0	24	233	42	1065	12	36	119	0	1264
14 Total	24201	20	5	391	0	1012	0	0	377	0	2206
STD	2120	17	5	189	0	211	0	0	87	0	335
15 Total	3348	12	0	21	0	325	1	0	191	0	550
STD	345	11	0	12	0	91	1	0	51	0	122
16 Total	16470	20	108	2266	0	16458	8	0	2121	0	21888
STD	1321	29	100	1243	0	2216	11	0	426	0	2977
17 Total	17269	10	0	2236	52	2033	0	0	782	0	6720
STD	1156	11	0	319	30	235	0	0	134	0	667
18 Total	8588	19	23	622	6	300	0	0	18	2	1253
STD	993	15	9	107	4	67	0	0	6	2	182
19 Total	44087	210	181	3076	123	2162	0	0	372	16	7007
STD	1894	91	75	501	51	380	0	0	132	12	857
28 Total	9707	0	21	1334	30	1084	0	0	66	0	2888
STD	659	0	21	399	25	277	0	0	30	0	601
29 Total	6616	0	10	308	2	754	0	0	65	0	1402
STD	687	0	3	78	2	145	0	0	29	0	275
Total	170798	291	375	11191	254	33336	26	67	4372	18	54881
STD	4143	99	129	1471	77	2529	16	36	492	12	3498

Table 9. Rockfish released and effort by species and month for the Strait of Georgia, 2000.

Month		Effort	Rockfish Catch, released									
			Black	Canary	Copper	China	Quillback	Redstripe	Tiger	Yellow eye	Yellow tail	All Rockfish
Jan -	Total	2778	0	0	165	0	2	0	0	0	0	288
Mar	STD	329	0	0	105	0	2	0	0	0	0	114
Apr	Total	10332	0	0	193	0	989	0	0	40	0	1541
	STD	1251	0	0	150	0	363	0	0	59	0	468
May	Total	7882	3	0	26	10	74	0	0	0	0	1080
	STD	1013	5	0	16	9	27	0	0	0	0	228
Jun	Total	26498	38	21	701	0	1210	0	0	12	0	6562
	STD	1672	28	22	386	0	305	0	0	5	0	864
Jul	Total	37056	8	9	696	0	1012	0	0	142	0	7977
	STD	1535	7	6	320	0	232	0	0	52	0	1156
Aug	Total	48083	0	0	296	0	1881	0	0	86	0	7527
	STD	2506	0	0	95	0	495	0	0	46	0	811
Sep	Total	28553	34	0	68	15	856	0	0	8	0	5648
	STD	1557	23	0	31	15	266	0	0	9	0	746
Oct	Total	5706	0	0	96	0	89	0	0	0	0	340
	STD	614	0	0	109	0	70	0	0	0	0	148
Nov -	Total	3910	0	0	0	0	10	0	0	0	0	513
Dec	STD	484	0	0	0	0	11	0	0	0	0	257
	Total	170798	83	30	2241	25	6123	0	0	288	0	31476
	STD	4143	37	23	554	17	775	0	0	92	0	1915

Table 10. Rockfish released and effort by species and Statistical Area for the Strait of Georgia, 2000.

Area	Effort	Rockfish Released									
		Black	Canary	Copper	China	Quillback	Redstripe	Tiger	Yellow eye	Yellow tail	All Rockfish
13 Total	40512	0	0	271	0	1512	0	0	5	0	4461
STD	1998	0	0	132	0	417	0	0	5	0	754
14 Total	24201	8	0	536	0	230	0	0	17	0	5354
STD	2120	7	0	373	0	134	0	0	11	0	1030
15 Total	3348	37	0	31	0	507	0	0	38	0	620
STD	345	24	0	27	0	168	0	0	21	0	173
16 Total	16470	14	0	0	0	1650	0	0	31	0	4800
STD	1321	15	0	0	0	463	0	0	18	0	701
17 Total	17269	0	30	559	10	981	0	0	83	0	5781
STD	1156	0	23	250	9	248	0	0	42	0	654
18 Total	8588	0	0	118	0	156	0	0	2	0	1417
STD	993	0	0	64	0	94	0	0	2	0	248
19 Total	44087	24	0	602	15	453	0	0	112	0	8004
STD	1894	24	0	283	15	175	0	0	75	0	978
28 Total	9707	0	0	93	0	378	0	0	0	0	556
STD	659	0	0	47	0	246	0	0	0	0	254
29 Total	6616	0	0	31	0	256	0	0	0	0	483
STD	687	0	0	6	0	67	0	0	0	0	94
Total	170798	83	30	2241	25	6123	0	0	288	0	31476
STD	4143	37	23	554	17	775	0	0	92	0	1916

Table 11. Other catches and effort by species and month for the Strait of Georgia, 2000

Month		Effort	Other Catch				Other Released			
			Mackeral	Unidentified	Total Other	Shellfish	Mackeral	Unidentified	Total Other	Shellfish
Jan -	Total	2778	0	0	0	1	0	0	24	7
Mar	STD	329	0	0	0	1	0	0	18	8
Apr	Total	10332	0	0	0	114	0	0	109	0
	STD	1251	0	0	0	98	0	0	53	0
May	Total	7882	0	0	1	0	0	0	372	59
	STD	1013	0	0	2	0	0	0	203	51
Jun	Total	26498	0	0	0	166	0	16	26	276
	STD	1672	0	0	0	38	0	16	18	71
Jul	Total	37056	0	0	4	511	0	0	2	368
	STD	1535	0	0	3	149	0	0	1	219
Aug	Total	48083	14	0	14	5618	0	23	87	68
	STD	2506	18	0	18	4829	0	16	35	43
Sep	Total	28553	0	0	0	33852	0	0	0	2159
	STD	1557	0	0	0	14169	0	0	0	546
Oct	Total	5706	0	0	4	0	0	0	0	0
	STD	614	0	0	4	0	0	0	0	0
Nov -	Total	3910	0	0	142	24	0	0	16	0
Dec	STD	484	0	0	143	24	0	0	20	0
	Total	170798	14	0	165	40286	0	39	636	2937
	STD	4143	18	0	144	14970	0	23	215	596

Table 12. Other catches and effort by species and Statistical Area for the Strait of Georgia, 2000.

Area	Effort	Other Catch				Other Released			
		Mackeral	Unidentified	Total Other	Shellfish	Mackeral	Unidentified	Total Other	Shellfish
13 Total	40512	0	0	0	40	0	0	0	11
STD	1998	0	0	0	34	0	0	0	11
14 Total	24201	14	0	14	514	0	0	0	276
STD	2120	18	0	18	430	0	0	0	218
15 Total	3348	0	0	0	198	0	0	0	234
STD	345	0	0	0	90	0	0	0	200
16 Total	16470	0	0	0	27884	0	0	0	42
STD	1321	0	0	0	14791	0	0	0	29
17 Total	17269	0	0	0	9827	0	0	0	2042
STD	1156	0	0	0	1554	0	0	0	506
18 Total	8588	0	0	2	4	0	13	31	0
STD	993	0	0	1	7	0	7	14	0
19 Total	44087	0	0	149	135	0	26	605	7
STD	1894	0	0	143	101	0	21	215	8
28 Total	9707	0	0	0	196	0	0	0	125
STD	659	0	0	0	56	0	0	0	55
29 Total	6616	0	0	0	1488	0	0	0	200
STD	687	0	0	0	1645	0	0	0	95
Total	170798	14	0	165	40286	0	39	636	2937
STD	4143	18	0	144	14970	0	22	215	597

Table 13. Monthly CPUE (catches per boat trip) by species for the Strait of Georgia, 2000*.

Month	Salmon Catch						Salmon Released			Groundfish Catch					Total Catch Success
	Chinook	Coho	Chum	Pink	Sockeye	Total Salmon	Chinook	Coho	All Salmon	Halibut	Lingcod	Total Ground	Rockfish	Other	
Jan - Mar	0.65	0.00	0.00	0.00	0.00	0.65	0.61	0.00	0.61	0.01	0.00	0.08	0.08	0.00	0.81
Apr	0.10	0.00	0.00	0.00	0.00	0.10	0.18	0.05	0.23	0.00	0.00	0.46	0.51	0.00	1.06
May	0.14	0.00	0.00	0.00	0.00	0.14	0.12	0.22	0.34	0.02	0.01	0.37	0.40	0.00	0.91
Jun	0.20	0.00	0.00	0.00	0.00	0.20	0.14	0.12	0.26	0.00	0.06	0.26	0.33	0.00	0.78
Jul	0.17	0.04	0.00	0.10	0.09	0.39	0.25	0.17	0.61	0.00	0.04	0.33	0.28	0.00	1.01
Aug	0.24	0.03	0.00	0.12	0.06	0.45	0.51	0.25	1.33	0.00	0.05	0.15	0.40	0.00	1.00
Sep	0.11	0.05	0.04	0.02	0.00	0.21	0.43	0.40	1.34	0.00	0.01	0.18	0.22	0.00	0.61
Oct	0.08	0.06	0.26	0.00	0.00	0.39	0.20	0.46	1.24	0.00	0.00	0.06	0.13	0.00	0.57
Nov - Dec	0.59	0.01	0.00	0.00	0.00	0.60	0.64	0.03	0.72	0.01	0.00	0.06	0.16	0.04	0.86
Apr - Sep	0.18	0.03	0.01	0.06	0.04	0.31	0.33	0.22	0.86	0.003	0.04	0.25	0.34	0.00	0.90
Year	0.19	0.03	0.01	0.06	0.04	0.33	0.34	0.22	0.87	0.003	0.04	0.23	0.32	0.00	0.88

- Calculated using Tables 3, 5, 7 and 11 data.

Table 14. Number of adipose-clipped chinook observed by month and Region for the Strait of Georgia, 2000.

Month		North Gulf	South Gulf	Victoria	Total
Jan	Unmarked	0	0	418	418
to	Marked	0	0	52	52
Mar	Total	0	0	470	470
Apr	Unmarked	10	18	27	55
Apr	Marked	4	3	4	11
Apr	Total	14	21	31	66
May	Unmarked	50	40	51	141
May	Marked	2	2	9	13
May	Total	52	42	60	154
Jun	Unmarked	188	63	89	340
Jun	Marked	6	5	6	17
Jun	Total	194	68	95	357
Jul	Unmarked	311	56	87	454
Jul	Marked	11	1	3	15
Jul	Total	322	57	90	469
Aug	Unmarked	400	83	103	586
Aug	Marked	11	12	4	27
Aug	Total	411	95	107	613
Sep	Unmarked	63	26	26	115
Sep	Marked	1	3	3	7
Sep	Total	64	29	29	122
Oct	Unmarked	5	0	40	45
Oct	Marked	0	0	5	5
Oct	Total	5	0	45	50
Nov	Unmarked	0	0	193	193
to	Marked	0	0	23	23
Dec	Total	0	0	216	216
Total	Unmarked	1027	286	1034	2347
	Marked	35	26	109	170
	Total	1062	312	1143	2517
Proportion of Marks		0.033	0.083	0.095	0.068

Table 15. Monthly estimated catches of adipose-clipped chinook by Region for the Strait of Georgia, 2000*.

Month		North Gulf	South Gulf	Victoria	Total
Jan - Mar	Catch			198	198
	STD			38	38
Apr	Catch	54	107	13	114
	STD	37	70	8	79
May	Catch	6	13	96	179
	STD	4	10	51	52
Jun	Catch	72	49	138	437
	STD	33	25	58	71
Jul	Catch	152	11	42	302
	STD	48	11	25	55
Aug	Catch	244	112	57	368
	STD	78	34	30	90
Sep	Catch	15	138	81	136
	STD	15	84	51	99
Oct	Catch	0		38	25
	STD	0		20	20
Nov - Dec	Catch			244	244
	STD			67	67
Total	Catch	543	430	907	2004
	STD	103	81	120	177

* Calculated using data from Table 14 and Appendix D-2.

Table 16. Monthly number of adipose-clipped coho observed by Region for the Strait of Georgia, 2000.

Month		North Gulf	South Gulf	Victoria	Total
Jan	Unmarked	0	0	0	0
to	Marked	0	0	4	4
Mar	Total	0	0	4	4
Apr	Unmarked	0	0	0	0
Apr	Marked	0	0	0	0
Apr	Total	0	0	0	0
May	Unmarked	0	0	1	1
May	Marked	0	0	0	0
May	Total	0	0	1	1
Jun	Unmarked	0	0	0	0
Jun	Marked	0	2	0	2
Jun	Total	0	2	0	2
Jul	Unmarked	0	1	1	2
Jul	Marked	0	66	0	66
Jul	Total	0	67	1	68
Aug	Unmarked	2	6	12	20
Aug	Marked	0	45	2	47
Aug	Total	2	51	14	67
Sep	Unmarked	2	1	1	4
Sep	Marked	49	14	1	64
Sep	Total	51	15	2	68
Oct	Unmarked	0	0	10	10
Oct	Marked	7	0	37	44
Oct	Total	7	0	47	54
Nov	Unmarked	0	0	0	0
to	Marked	0	0	2	2
Dec	Total	0	0	2	2
Total	Unmarked	4	8	25	37
	Marked	56	127	46	229
	Total	60	135	71	266
Proportion of Marks		0.933	0.941	0.648	0.861

Table 17. Monthly estimated catches of adipose-clipped coho by Region for the Strait of Georgia, 2000*.

Month		North Gulf	South Gulf	Victoria	Total
Jan -	Catch	0	0	0	0
Mar	STD	0	0	0	0
Apr	Catch	0	0	0	0
	STD	0	0	0	0
May	Catch	0	0	0	0
	STD	0	0	0	0
Jun	Catch	0	58	0	58
	STD	0	44	0	44
Jul	Catch	0	1352	0	1366
	STD	0	304	0	304
Aug	Catch	0	1114	27	1063
	STD	0	199	24	200
Sep	Catch	876	315	25	1223
	STD	178	128	29	222
Oct	Catch	74	0	207	275
	STD	32	0	84	84
Nov -	Catch	0	0	47	47
Dec	STD	0	0	48	48
Total	Catch	950	2838	306	4031
	STD	183	383	105	438

Table 18. Origin of coded-wire tagged chinook caught in the Strait of Georgia, 2000 (Places of origin with less than 5 returns are totaled as Other river).

River or Creek of Origin	Country	Number	Percent
Stave	CAN	8	1.5%
Tenderfoot	CAN	8	1.5%
Capilano	CAN	8	1.5%
Sooke	CAN	10	1.9%
Nicola	CAN	11	2.1%
Quinsam	CAN	12	2.3%
Big Qualicum	CAN	16	3.0%
Chilliwack	CAN	16	3.0%
Shuswap	CAN	19	3.6%
Chehalis	CAN	21	4.0%
Puntledge	CAN	25	4.8%
Chemainus	CAN	31	5.9%
Cowichan	CAN	34	6.5%
Nanaimo	CAN	34	6.5%
Other Rivers	CAN	20	3.8%
Grovers	USA	5	1.0%
Minter	USA	6	1.1%
Clear	USA	6	1.1%
Purdy	USA	7	1.3%
East Sound Bay	USA	7	1.3%
WA Prod Area STIL	USA	7	1.3%
Skagit	USA	8	1.5%
Green	USA	14	2.7%
Kendall	USA	30	5.7%
Cascade	USA	38	7.2%
Wallace	USA	70	13.3%
Other Rivers	USA	54	10.3%
		525	

Table 19. Monthly number and percent age composition of chinook sampled for age in the Strait of Georgia Creel Survey, 2000.

Month	Age 2		Age 3		Age 4		Age 5		Total Sampled
	n	%	n	%	n	%	n	%	
Jan-Mar	0	0.0%	104	41.1%	143	56.5%	6	2.4%	253
Apr	0	0.0%	9	47.4%	10	52.6%	0	0.0%	19
May	0	0.0%	14	45.2%	16	51.6%	1	3.2%	31
Jun	0	0.0%	47	46.5%	41	40.6%	13	12.9%	101
Jul	2	1.6%	64	51.6%	46	37.1%	12	9.7%	124
Aug	2	1.2%	113	65.3%	51	29.5%	7	4.0%	173
Sep	5	8.5%	41	69.5%	12	20.3%	1	0.0%	59
Oct	3	42.9%	3	42.9%	1	14.3%	0	0.0%	7
Total	12		395		320		40		767
Overall age composition of catch*		2.2%		56.6%		35.0%		6.2%	

* Overall age composition calculated from table 20.

Table 20. Monthly estimated catches at age of chinook for the Strait of Georgia, 2000*.

Month		Age 2	Age 3	Age 4	Age 5	Total
Jan to Mar	Catch	0	737	1014	43	1794
	STD	0	56	56	17	
Apr	Catch	0	490	544	0	1034
	STD	0	119	119	0	
May	Catch	0	484	553	35	1072
	STD	0	96	97	34	
Jun	Catch	0	2410	2102	666	5178
	STD	0	257	253	173	
Jul	Catch	102	3278	2356	615	6352
	STD	72	285	276	169	
Aug	Catch	133	7519	3394	466	11512
	STD	94	417	399	172	
Sep	Catch	261	2139	626	52	3078
	STD	112	185	161	52	
Oct	Catch	186	186	62	0	434
	STD	81	81	57	0	
Nov to Dec						2296
Total	Catch	682	17244	10652	1876	32750
	STD	182	624	596	303	
Annual Proportion		2.2%	56.6%	35.0%	6.2%	100.0%

* Calculated by applying the total monthly chinook catch from Table 3 to the monthly age proportions from Table 18.

Table 21. Monthly mean nose-fork length (L) at age of chinook sampled in the Strait of Georgia Creel Survey, 2000.

Month	Age 2 L (mm)	n	Age 3 L (mm)	n	Age 4 L (mm)	n	Age 5 L (mm)	n	Total Sampled
Jan			506.2	38	634.1	56	660.0	1	95
Feb			505.2	62	636.9	79	737.5	4	145
Mar			526.3	4	590.0	8	640.0	1	13
Apr			642.2	9	751.0	10			19
May			683.2	14	813.4	16	910.0	1	31
Jun			666.1	47	810.4	41	894.2	13	101
Jul	595.0	2	705.2	64	812.1	46	820.4	12	124
Aug	600.0	2	783.8	113	853.4	51	897.9	7	173
Sep	576.0	5	690.5	41	834.2	12	835.0	1	59
Oct	526.7	3	683.3	3	635.0	1			7
Avg.	570.8	12	666.8	395	736.9	320	843.8	40	767

Table 22. Tidal effort estimates and sport catches for Northern Vancouver Island, 1998, 1999 and 2000. (This table uses values for July and August only for historical comparisons. See Appendix H for total effort and catch estimates for all months surveyed.)

Year	Effort	Salmon Catch						Total Salmon Release		Groundfish Catch			Total Finfish Catch
		Chinook	Coho	Chum	Pink	Sockeye	Total Salmon	Chinook	Coho	Halibut	Lingcod	Total Rockfish	
1998	14779	2224	0	788	14983	440	18435	6364	27247	3347	911	10478	33419
1999	32443	7259	430	607	42398	1538	52227	5256	22604	6117	1575	15691	75610
2000	15934	4628	125	103	23519	744	29172	4904	9626	1524	1066	8959	44845

Table 23. Salmon catches and effort by species and month for Northern Vancouver Island, 2000.

		Salmon Catch							Salmon Released							
Month	Value	Effort	Chinook	Chum	Coho	Pink	Sockeye	Total Salmon	Legal Chinook	Sub-legal Chinook	Legal Coho	Sub-legal Coho	Chum	Pink	Sockeye	Total Salmon
Jul	Total	7075	2228	10	19	8105	392	10795	176	2348	74	3108	0	3063	12	8780
	STD	1173	373	8	13	1794	95	2161	53	579	31	1034	0	710	13	2100
Aug	Total	8859	2400	93	106	15414	352	18377	161	2219	93	6351	0	9543	71	18465
	STD	758	276	38	52	1491	79	1654	52	453	47	788	0	1501	40	2073
	Total	15934	4628	103	125	23519	744	29172	337	4567	167	9459	0	12606	83	27245
	STD	1397	464	39	54	2333	123	2721	75	735	57	1300	0	1660	42	2951

Table 24. Salmon catches and effort by species and Statistical Sub-Area for Northern Vancouver Island, 2000.

		Salmon Catch							Salmon Released							
Area	Value	Effort	Chinook	Chum	Coho	Pink	Sockeye	Total Salmon	Legal Chinook	Sub-legal Chinook	Legal Coho	Sub-legal Coho	Chum	Pink	Sockeye	Total Salmon
A	Total	4797	1056	36	39	4577	102	5850	8	2052	0	4293	0	981	0	7335
	STD	1164	302	24	35	1673	42	1985	9	661	0	1196	0	540	0	2171
B	Total	4533	1433	39	39	4584	148	6245	133	933	25	1572	0	3250	51	5964
	STD	605	262	25	35	865	59	1039	55	227	16	312	0	977	37	1269
C	Total	4969	2124	28	47	12819	494	15523	196	1452	115	3155	0	8311	32	13287
	STD	409	235	17	22	1255	100	1436	50	225	44	376	0	1228	19	1531
E	Total	1635	15	0	0	1539	0	1554	0	130	27	439	0	64	0	659
	STD	254	10	0	0	566	0	570	0	47	32	147	0	46	0	200
	Total	15934	4628	103	125	23519	744	29172	337	4567	167	9459	0	12606	83	27245
	STD	1397	464	39	54	2333	123	2721	75	735	57	1300	0	1660	42	2951

Table 25. Groundfish catches and effort by species and month for Northern Vancouver Island, 2000.

			Groundfish Catch				Groundfish Released			
Month	Value	Effort (Boat Trips)	Halibut	Lingcod	Other Grndfish	Total Grndfish	Halibut	Lingcod	Other Grndfish	Total Grndfish
Jul	Total	7075	736	588	320	2830	162	365	309	2571
	STD	1173	173	176	106	269	66	98	140	183
Aug	Total	8859	788	478	62	3884	17	471	74	3468
	STD	758	166	106	32	200	13	266	34	268
	Total	15934	1524	1066	382	6714	179	836	383	6039
	STD	1397	240	205	111	335	67	284	144	325

* There were zero catches of Herring, English Sole and Flounder in 2000.

Table 26. Groundfish catches and effort by species and Statistical Sub-Area for Northern Vancouver Island, 2000.

			Groundfish Catch				Groundfish Released			
Area	Value	Effort (Boat Trips)	Halibut	Lingcod	Other Grndfish	Total Grndfish	Halibut	Lingcod	Other Grndfish	Total Grndfish
A	Total	4797	604	309	140	1463	13	58	47	380
	STD	1164	172	156	80	246	15	47	40	63
B	Total	4533	658	509	136	3079	48	547	241	3607
	STD	605	153	116	63	202	32	272	128	302
C	Total	4969	177	239	106	1852	40	231	48	1697
	STD	409	52	65	44	95	23	65	23	73
E	Total	1635	85	9	0	320	78	0	47	355
	STD	254	42	8	0	43	52	0	47	70
	Total	15934	1524	1066	382	6714	179	836	383	6039
	STD	1397	240	205	111	335	67	284	144	325

* There were zero catches of Herring, English Sole and Flounder in 2000.

Table 27. Rockfish catches and effort by species and month for Northern Vancouver Island, 2000.

			Rockfish Catch, kept									
Month	Value	Effort (Boat Trips)	Black	Canary	Copper	China	Quillback	Redstripe	Tiger	Yelloweye	Yellowtail	All Rockfish
Jul	Total	7075	613	55	397	43	1735	0	0	702	0	4079
	STD	1173	210	29	137	25	419	0	0	282	0	998
Aug	Total	8859	619	117	336	56	2616	0	0	784	0	4880
	STD	758	232	52	95	27	465	0	0	175	0	800
	Total	15934	1232	172	733	99	4351	0	0	1486	0	8959
	STD	1397	313	60	166	37	626	0	0	332	0	1279

Table 28. Rockfish catches and effort by species and Statistical Sub-area for Northern Vancouver Island, 2000.

			Rockfish Catch, kept									
Area	Value	Effort (Boat Trips)	Black	Canary	Copper	China	Quillback	Redstripe	Tiger	Yelloweye	Yellowtail	All Rockfish
A	Total	4797	908	136	177	82	1326	0	0	712	0	3627
	STD	1164	285	54	80	32	423	0	0	287	0	1055
B	Total	4533	276	0	394	0	2071	0	0	540	0	3578
	STD	605	127	0	133	0	428	0	0	150	0	665
C	Total	4969	35	0	96	17	745	0	0	186	0	1175
	STD	409	23	0	34	18	156	0	0	66	0	211
E	Total	1635	13	36	66	0	209	0	0	48	0	579
	STD	254	10	26	49	0	76	0	0	28	0	189
	Total	15934	1232	172	733	99	4351	0	0	1486	0	8959
	STD	1397	313	60	166	37	626	0	0	332	0	1279

Table 29. Rockfish released and effort by species and month for Northern Vancouver Island, 2000.

			Rockfish Catch,released									
Month	Value	Effort (Boat Trips)	Black	Canary	Copper	China	Quillback	Redstripe	Tiger	Yellow eye	Yellow tail	All Rockfish
Jul	Total	7075	47	0	90	72	532	0	0	0	0	999
	STD	1173	32	0	40	76	194	0	0	0	0	275
Aug	Total	8859	139	0	115	143	653	0	0	0	0	1109
	STD	758	80	0	103	129	359	0	0	0	0	442
	Total	15934	186	0	205	215	1185	0	0	0	0	2108
	STD	1397	86	0	111	150	408	0	0	0	0	520

Table 30. Rockfish released and effort by species and Statistical Sub-area for Northern Vancouver Island, 2000.

			Rockfish Catch, released									
Area	Value	Effort (Boat Trips)	Black	Canary	Copper	China	Quillback	Redstripe	Tiger	Yellow eye	Yellow tail	All Rockfish
A	Total	4797	128	0	0	0	223	0	0	0	0	399
	STD	1164	79	0	0	0	107	0	0	0	0	188
B	Total	4533	30	0	128	88	718	0	0	0	0	1034
	STD	605	26	0	104	78	381	0	0	0	0	428
C	Total	4969	28	0	77	127	239	0	0	0	0	524
	STD	409	21	0	38	128	102	0	0	0	0	196
E	Total	1635	0	0	0	0	5	0	0	0	0	151
	STD	254	0	0	0	0	6	0	0	0	0	118
	Total	15934	186	0	205	215	1185	0	0	0	0	2108
	STD	1397	86	0	111	150	408	0	0	0	0	520

Table 31. Other catches and effort by species and month for Northern Vancouver Island, 2000.

			Other Catch				Other Released			
Month	Value	Effort (Boat Trips)	Mackeral	Unident	Other	Shellfish	Mackeral	Unident	Other	Shellfish
Jun	Total	7075	0	0	0	165	4	0	4	44
	STD	1173	0	0	0	105	4	0	4	30
Jul	Total	8859	0	0	0	397	0	0	0	282
	STD	758	0	0	0	211	0	0	0	148
	Total	15934	0	0	0	562	4	0	4	326
	STD	1397	0	0	0	236	4	0	4	151

Table 32. Other catches and effort by species and Statistical Sub-area for Northern Vancouver Island, 2000.

			Other Catch				Other Released			
Area	Value	Effort (Boat Trips)	Mackeral	Unident	Other	Shellfish	Mackeral	Unident	Other	Shellfish
A	Total	4797	0	0	0	0	4	0	4	0
	STD	1164	0	0	0	0	4	0	4	0
B	Total	4533	0	0	0	359	0	0	0	286
	STD	605	0	0	0	199	0	0	0	147
C	Total	4969	0	0	0	74	0	0	0	32
	STD	409	0	0	0	75	0	0	0	32
E	Total	1635	0	0	0	129	0	0	0	8
	STD	254	0	0	0	101	0	0	0	8
	Total	15934	0	0	0	562	4	0	4	326
	STD	1397	0	0	0	236	4	0	4	151

Table 33. Monthly CPUE (catches per boat trip) by species for Northern Vancouver Island, 2000.

Month	Salmon Catch						Salmon Released			Groundfish Catch					Total Catch Success
	Chinook	Coho	Chum	Pink	Sockeye	Total Salmon	Chinook	Coho	Other Salmon	Halibut	Lingcod	Total Grndfish	Rockfish	Other	
Jul	0.31	0.00	0.00	1.15	0.06	1.53	0.36	0.45	1.24	0.10	0.08	0.40	0.58	0.00	2.50
Aug	0.27	0.01	0.01	1.74	0.04	2.07	0.27	0.73	2.08	0.09	0.05	0.44	0.55	0.00	3.06
Yearly	0.29	0.01	0.01	1.48	0.05	1.83	0.31	0.60	1.71	0.10	0.07	0.42	0.56	0.00	2.81

* Calculated using tables 23, 25, 27 and 31

Table 34. Monthly number of adipose-clipped chinook observed for Northern Vancouver Island, 2000.

Jul	Unclipped	293
Jul	Clipped	5
Jul	Total	298
Aug	Unclipped	220
Aug	Clipped	6
Aug	Total	226
Total	Unclipped	513
	Clipped	11
	Total	524
Proportion of Marks		0.021

Table 35. Monthly estimated catches of adipose-clipped chinook for Northern Vancouver Island, 2000.

Jul	Catch	37
	STD	18
Aug	Catch	64
	STD	27
Total	Catch	101
	STD	29

Table 36. Monthly number and percent age composition of chinook sampled for age in Northern Vancouver Island Creel Survey, 2000.

Month	Age 3		Age 4		Age 5		Age 6		Total
	n	%	n	%	n	%	n	%	Sampled
Jul	38	16.1%	156	66.1%	41	17.4%	1	0.4%	236
Aug	61	39.1%	76	48.7%	18	11.5%	1	0.6%	156
Total	99		232		59		2		392
Overall age composition of catch*		28.0%		57.1%		14.3%		0.5%	

*Overall age composition obtained from Table 37.

Table 37. Monthly estimated catches at age of chinook for Northern Vancouver Island, 2000.

Month		Age 3	Age 4	Age 5	Age 6	Total
Jul	Catch	359	1473	387	9	2228
	STD	53	70	55	9	104
Aug	Catch	938	1169	277	15	2400
	STD	94	96	61	15	149
Total	Catch	1297	2642	664	25	4628
	STD	108	119	82	18	182
Annual Proportion		28.0%	57.1%	14.3%	0.5%	100.0%

Table 38. Monthly mean nose-fork length (L) at age of chinook sampled in the Northern Vancouver Island Creel Survey, 2000.

Month	Age 3 L (mm)	n	Age 4 L (mm)	n	Age 5 L (mm)	n	Age 6 L (mm)	n	Total Sampled
Jul	739.2	38	832.4	156	927.0	41	970.0	1	236
Aug	740.3	61	827.2	76	974.4	18	1035.0	1	156
Avg.	739.8	99	829.8	232	950.7	59	1002.5	2	392

FIGURES

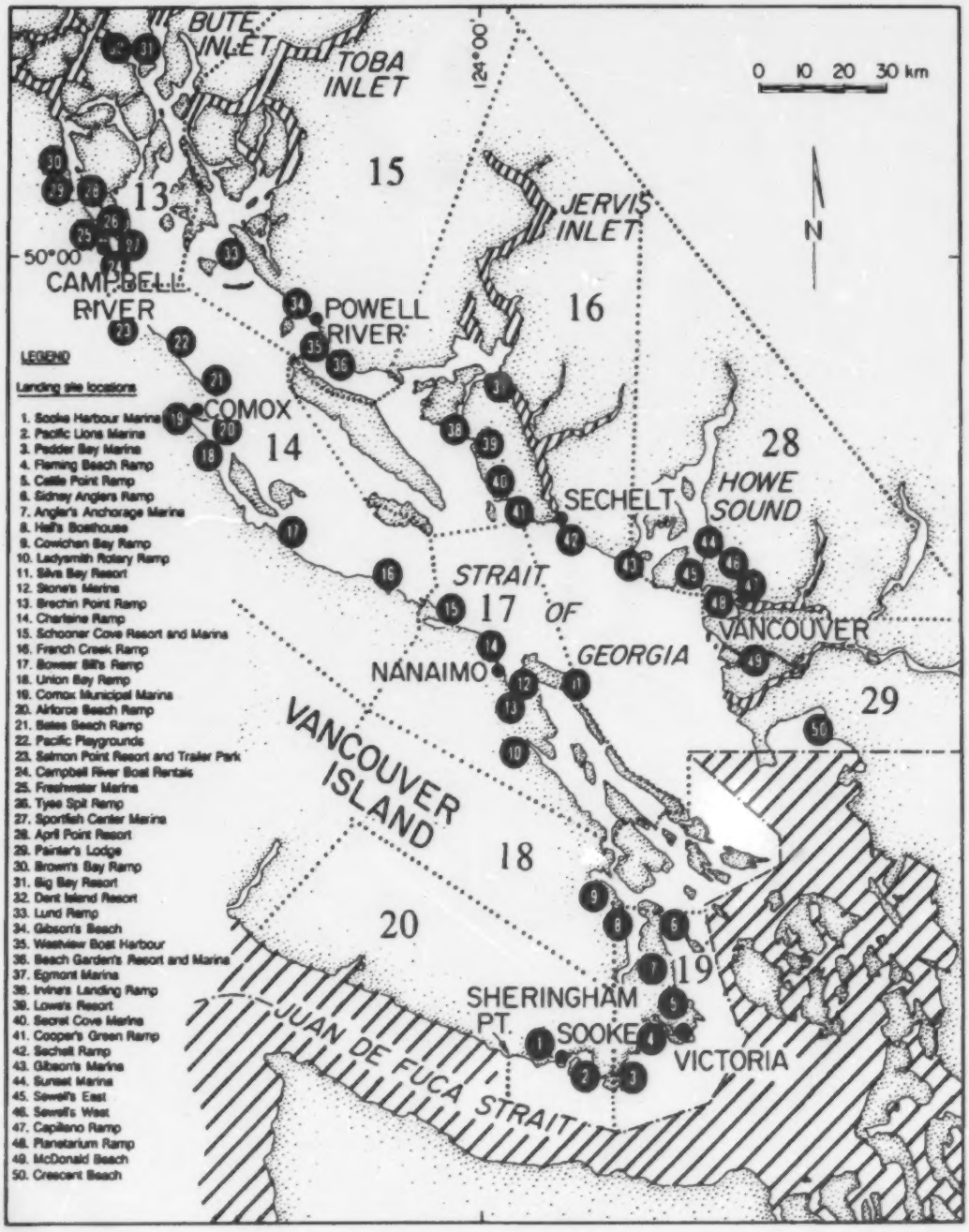


Figure 1. Strait of Georgia creel survey study area and landing site locations, 2000.

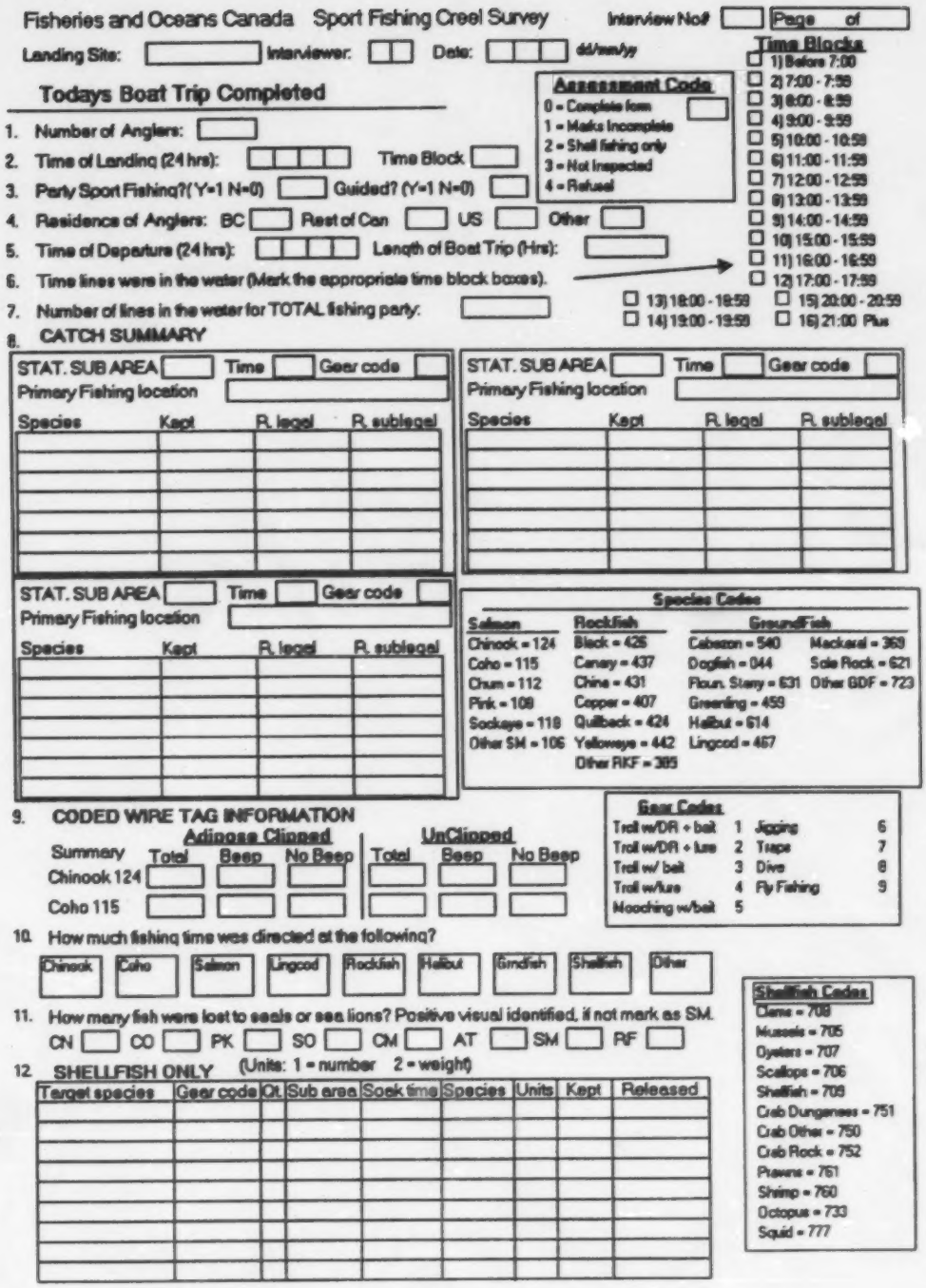


Figure 2. Strait of Georgia and Northern Vancouver Island interview form for 2000.

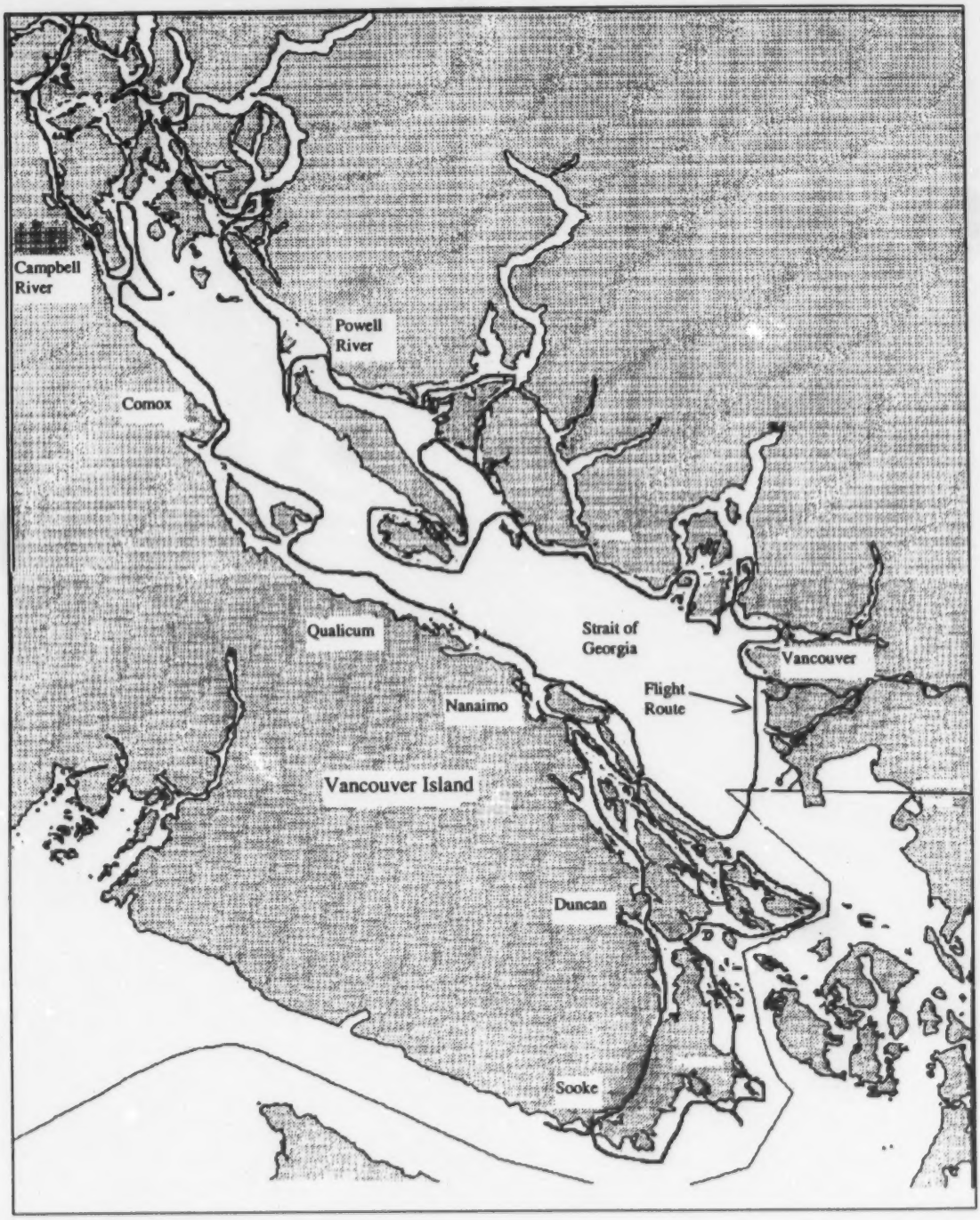


Figure 3. Overflight routes for the Strait of Georgia, 2000.

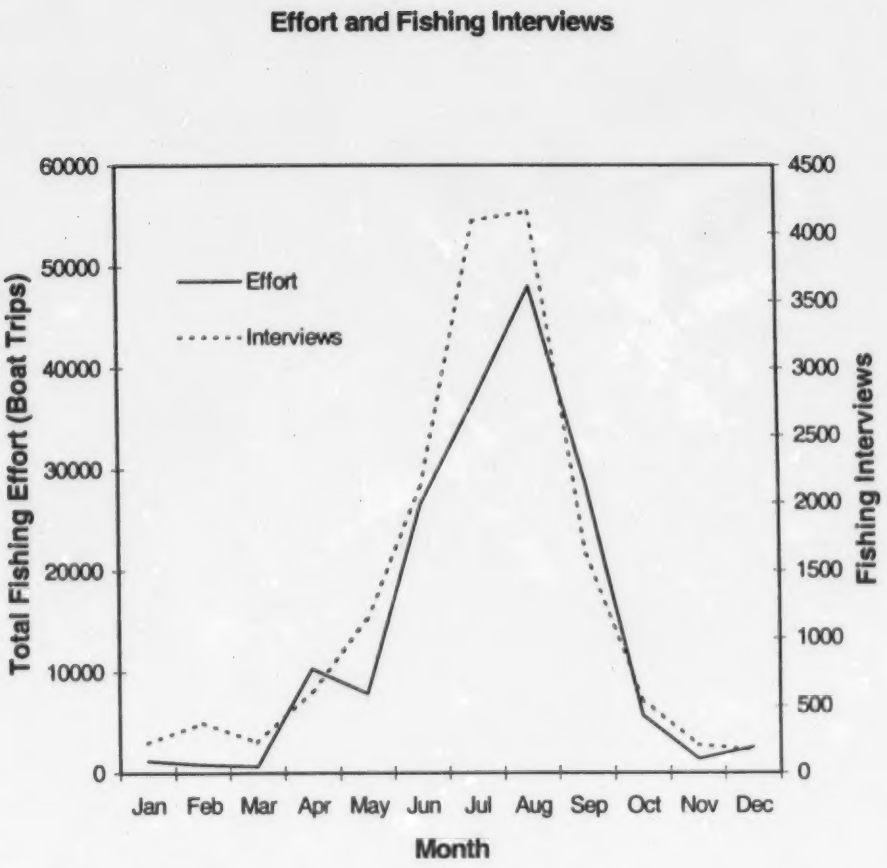


Figure 4. Comparison of monthly total fishing effort and monthly fishing interviews, Strait of Georgia, 2000.

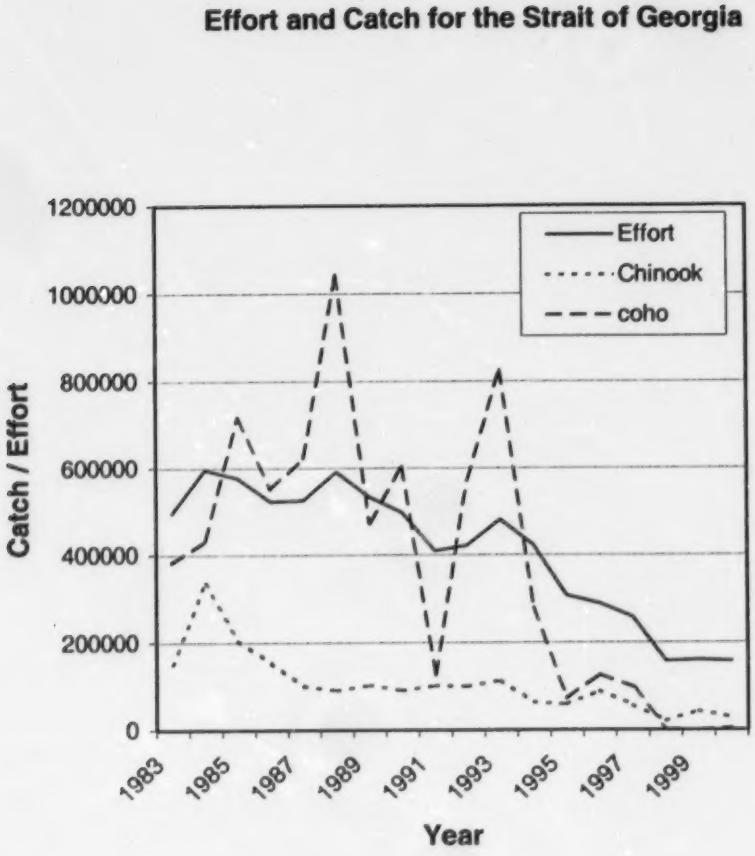


Figure 5. Tidal effort (boat trips) statistics and sport catches of chinook and coho salmon for the Strait of Georgia, 1983 – 2000. (For the purposes of historical comparisons only the data from April to September were used. See Appendix E-3 for historical data graph 1960 to 1982).

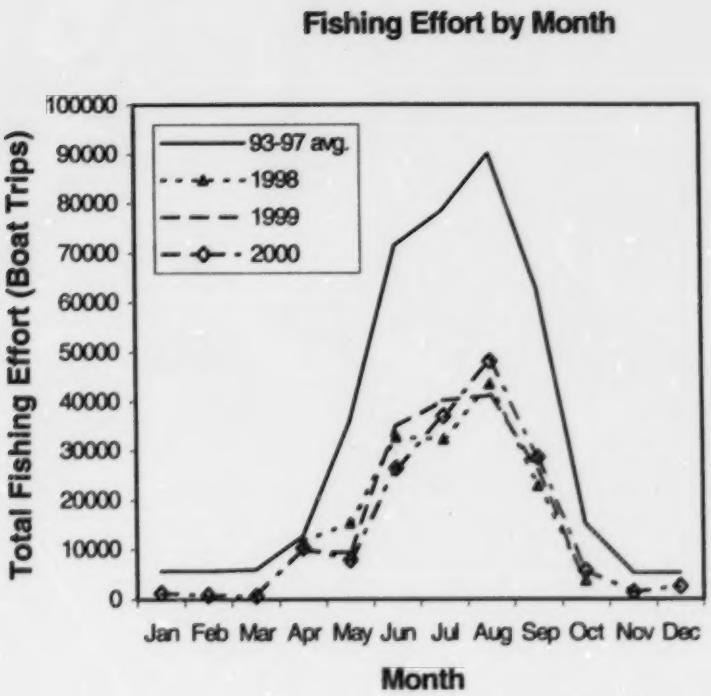


Figure 6. Monthly fishing effort estimates (boat trips) for the Strait of Georgia sport fishery for 1998, 1999, 2000 and the 5 year avg. for 1993 to 1997.

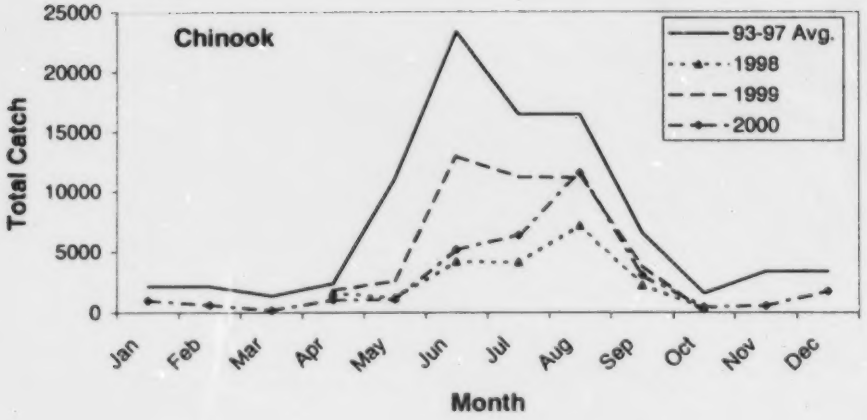


Figure 7. Monthly chinook catches for the Strait of Georgia sport fishery for 1998, 1999, 2000 and the five year avg. for 1993 to 1997.

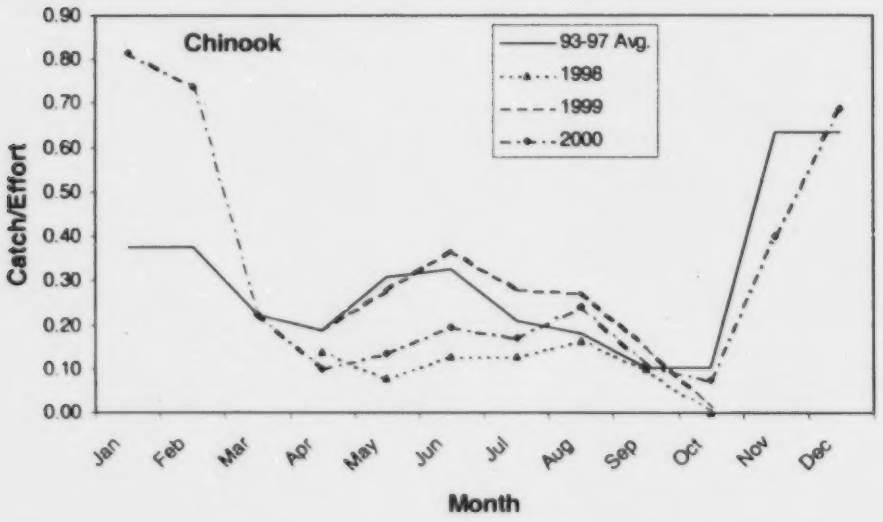


Figure 8. Monthly chinook catches per boat trip for the Strait of Georgia sport fishery for 1998, 1999, 2000 and the five year avg. for 1993 to 1997.

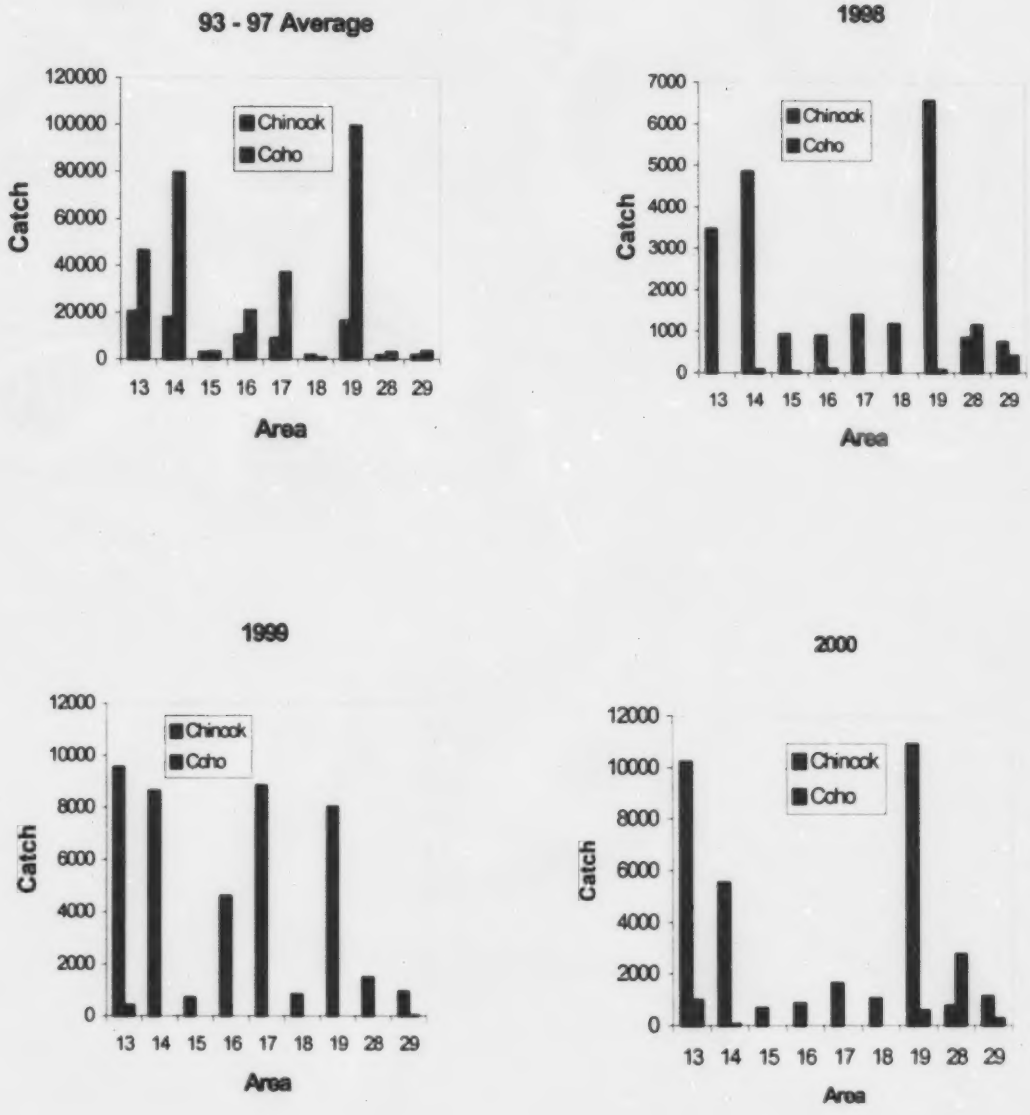


Figure 9. Annual sport catches of chinook and coho salmon by Statistical Area in the Strait of Georgia, 1993-1997 avg., 1998, 1999 and 2000.

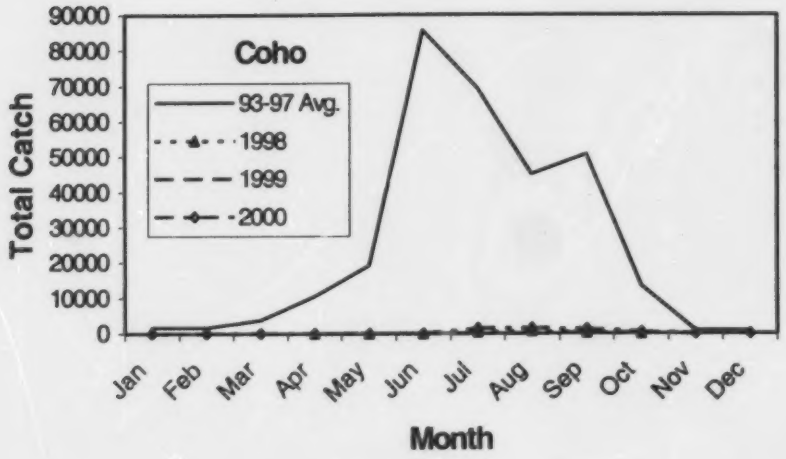


Figure 10. Monthly coho catches for the Strait of Georgia sport fishery for 1993-1997 avg., 1998, 1999 and 2000.

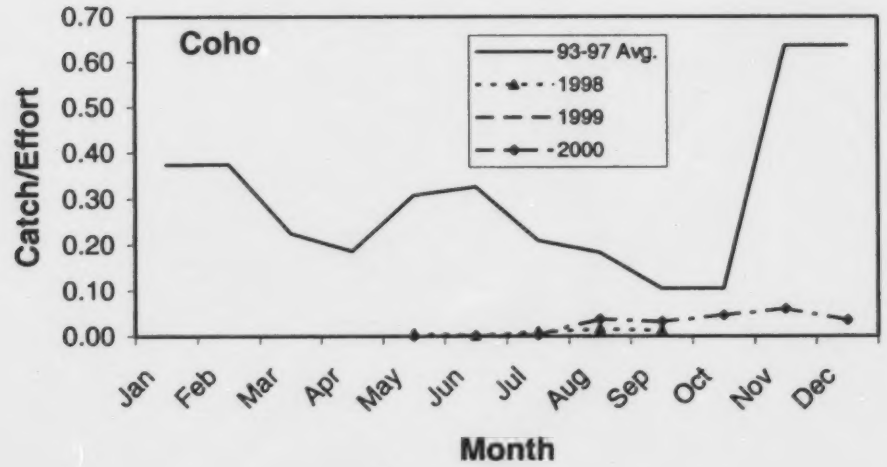


Figure 11. Monthly coho catches per boat trip for the Strait of Georgia sport fishery for 1993-1997 avg., 1998, 1999 and 2000.

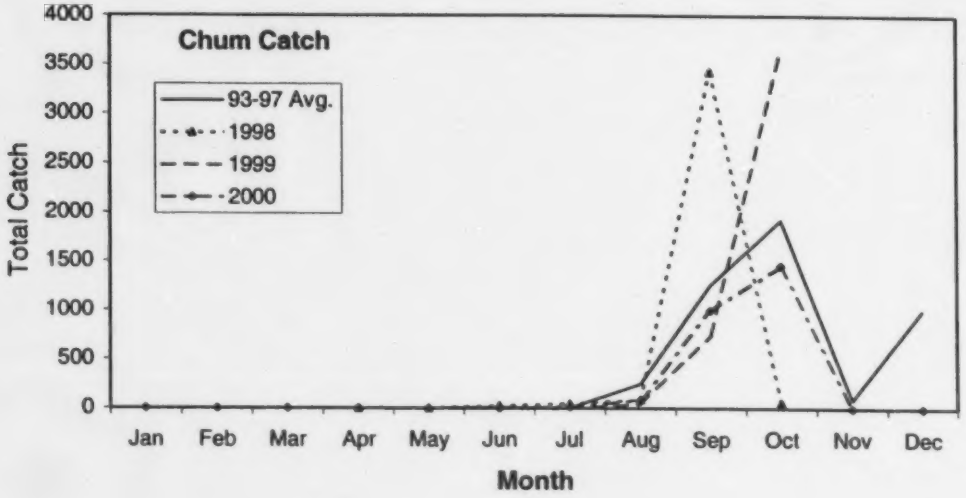


Figure 12. Monthly chum catches for the Strait of Georgia sport fishery, 1993-1997 avg., 1998, 1999 and 2000.

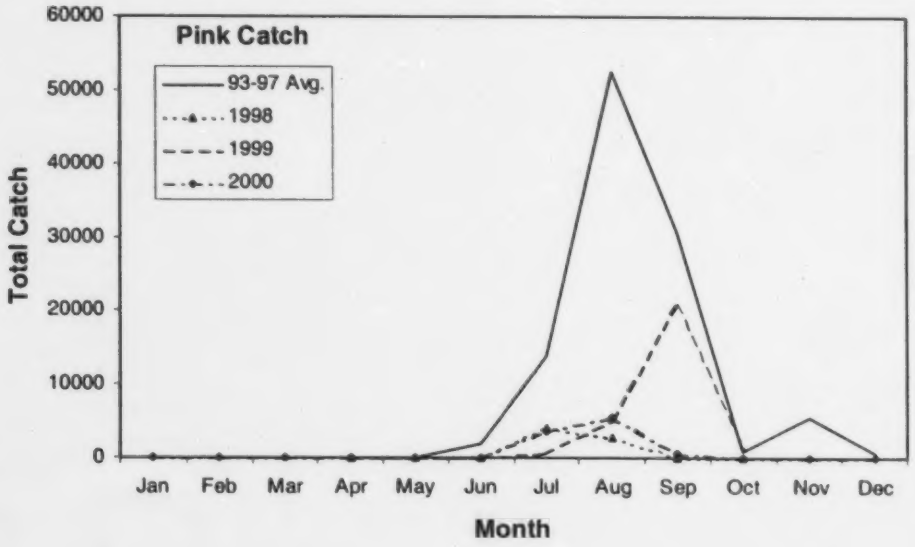


Figure 13. Monthly pink catches for the Strait of Georgia sport fishery, 1993-1997 avg., 1998, 1999 and 2000.

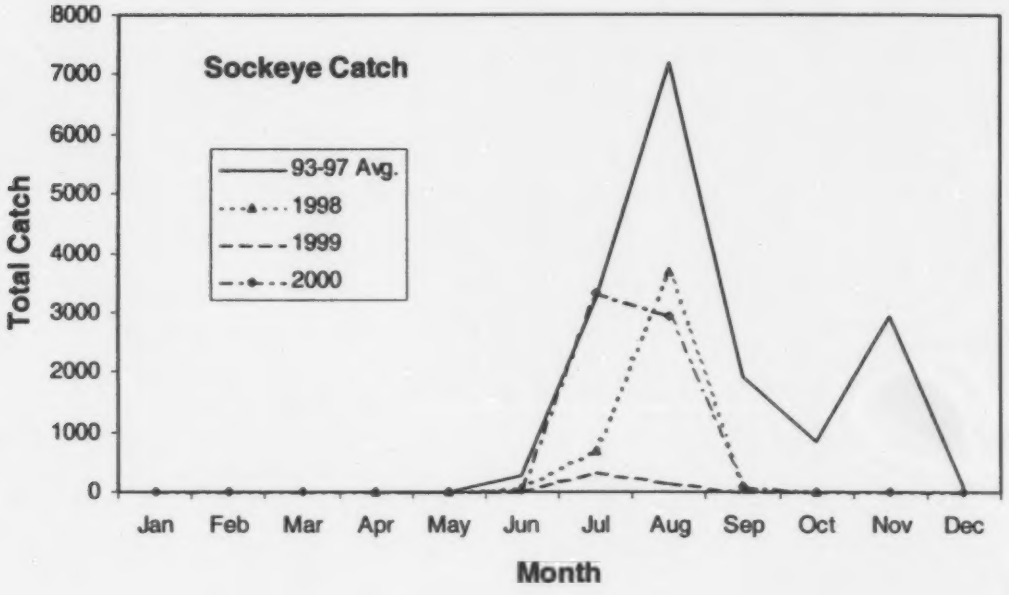


Figure 14. Monthly sockeye catches for the Strait of Georgia sport fishery for 1993-1997 avg.,1998, 1999 and 2000.

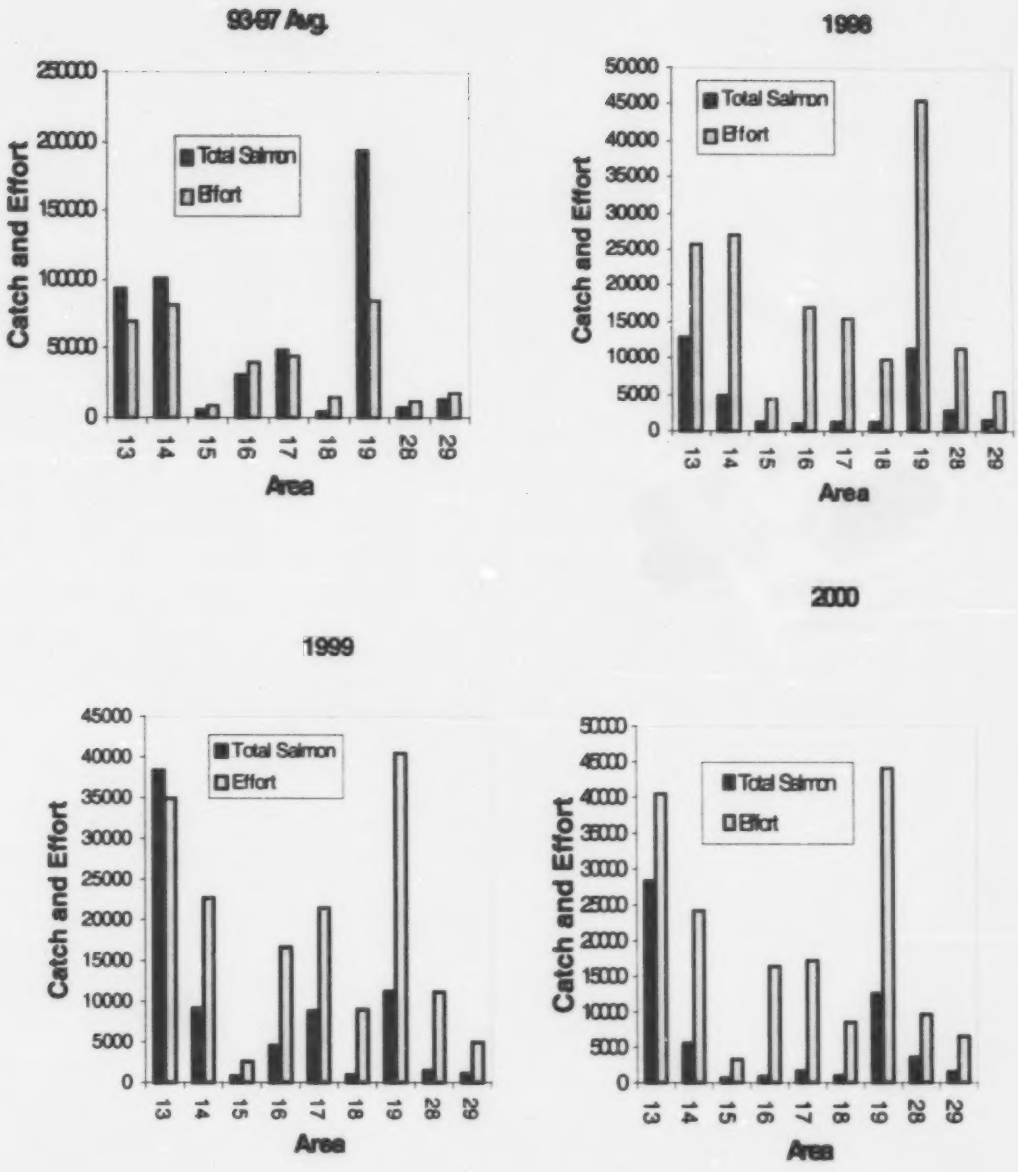


Figure 15. Total salmon landed and total fishing effort expended by Statistical Area in the Strait of Georgia sport fishery, 1993-1997 avg., 1998, 1999 and 2000.

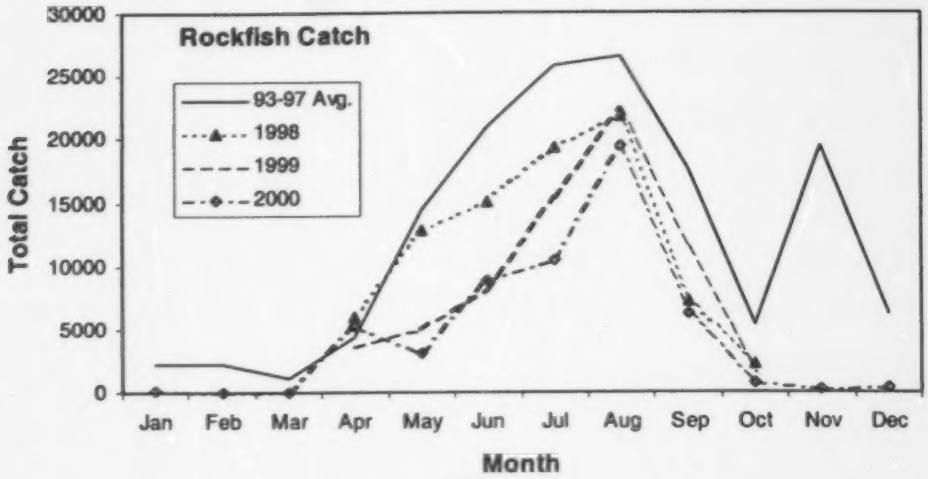


Figure 16. Monthly rockfish catches for the Strait of Georgia sport fishery, 1993-1997 avg., 1998, 1999 and 2000.

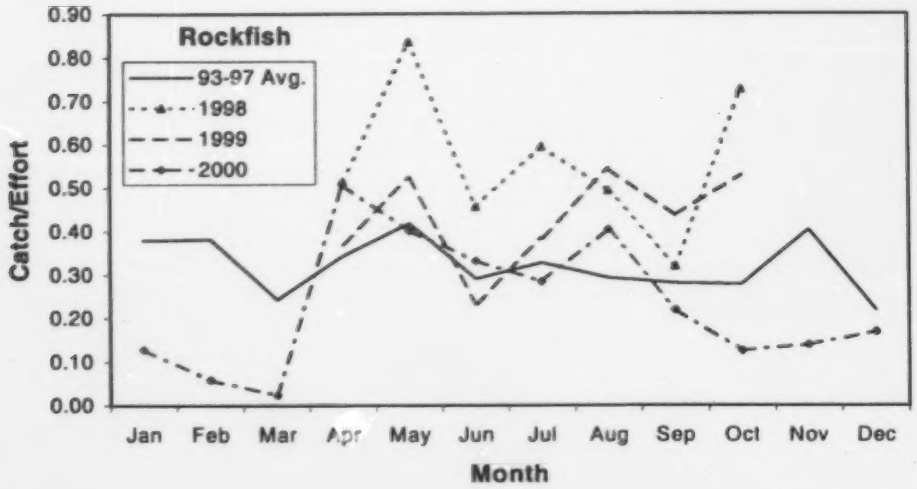


Figure 17. Monthly rockfish catches per boat trip for the Strait of Georgia,1993-1997 avg., 1998, 1999 and 2000.

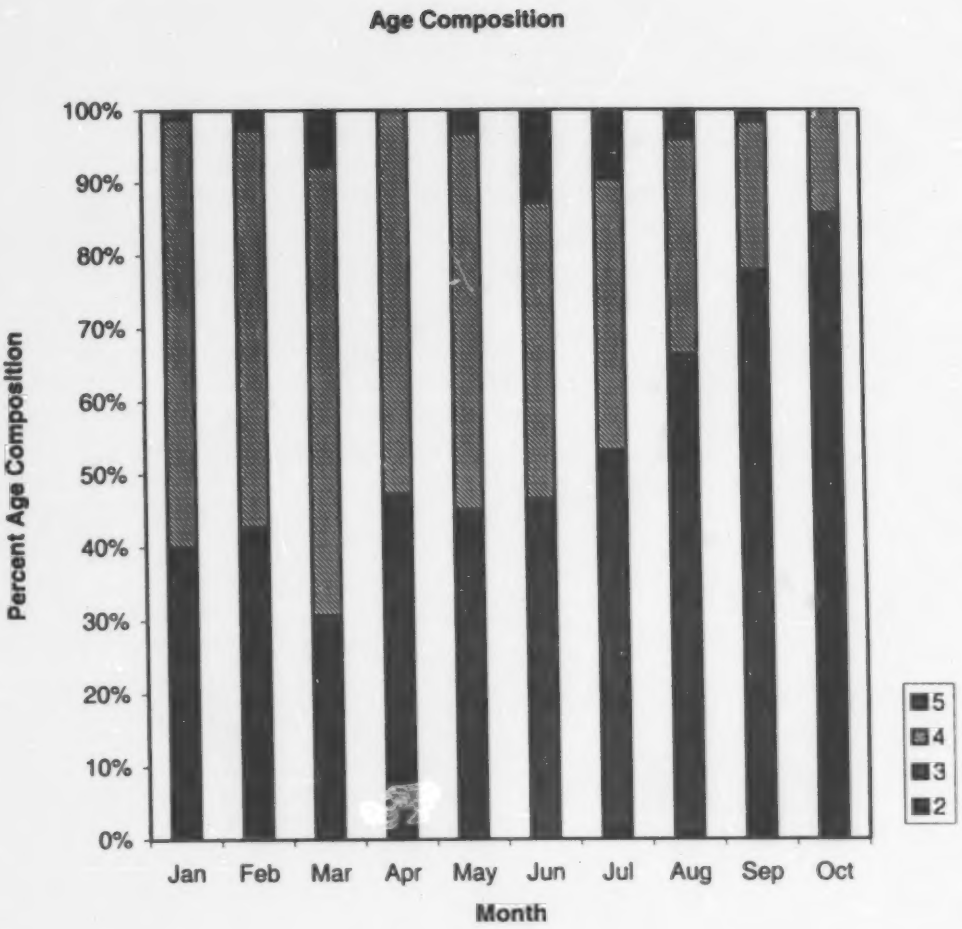


Figure 18. Monthly percent age composition of chinook salmon sampled in the Strait of Georgia Creel Survey, 2000.

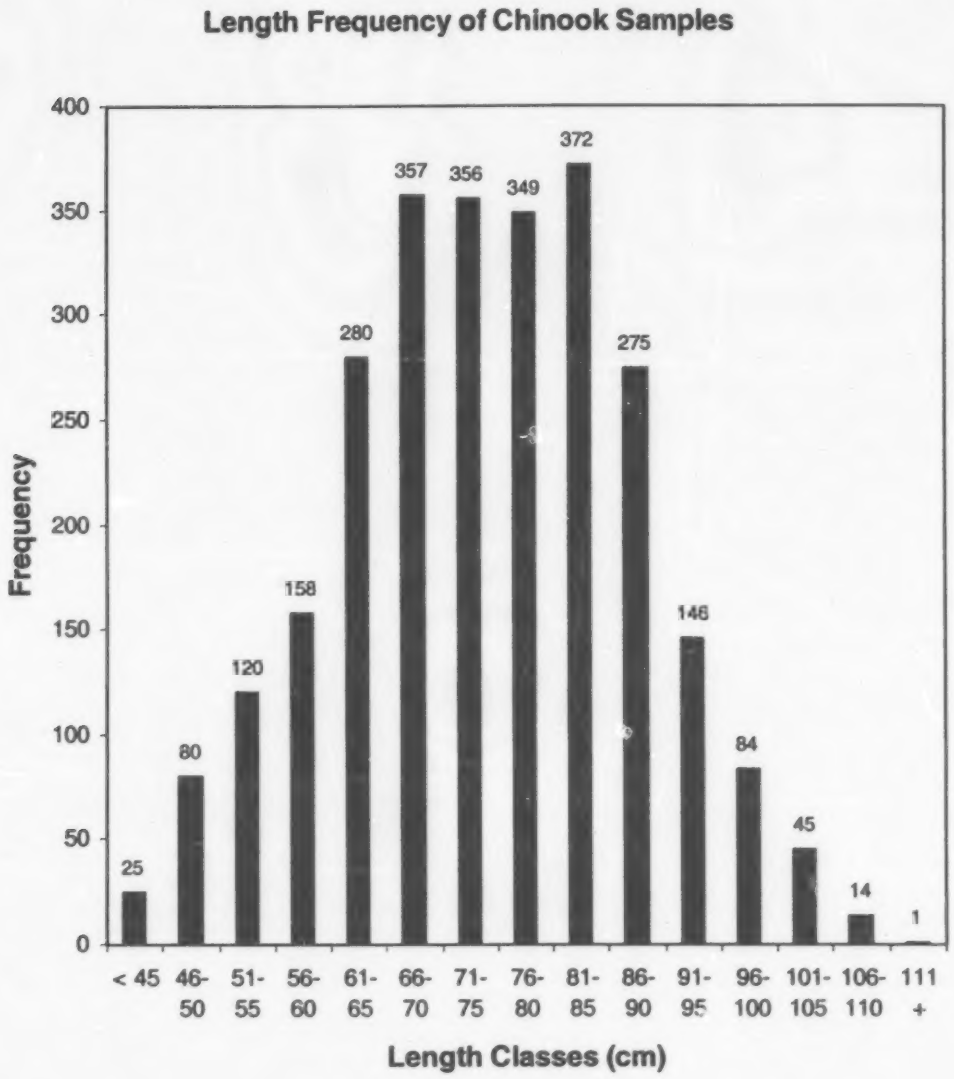


Figure 19. Length frequency distribution of chinook salmon sampled in the Strait of Georgia Creel Survey, 2000.

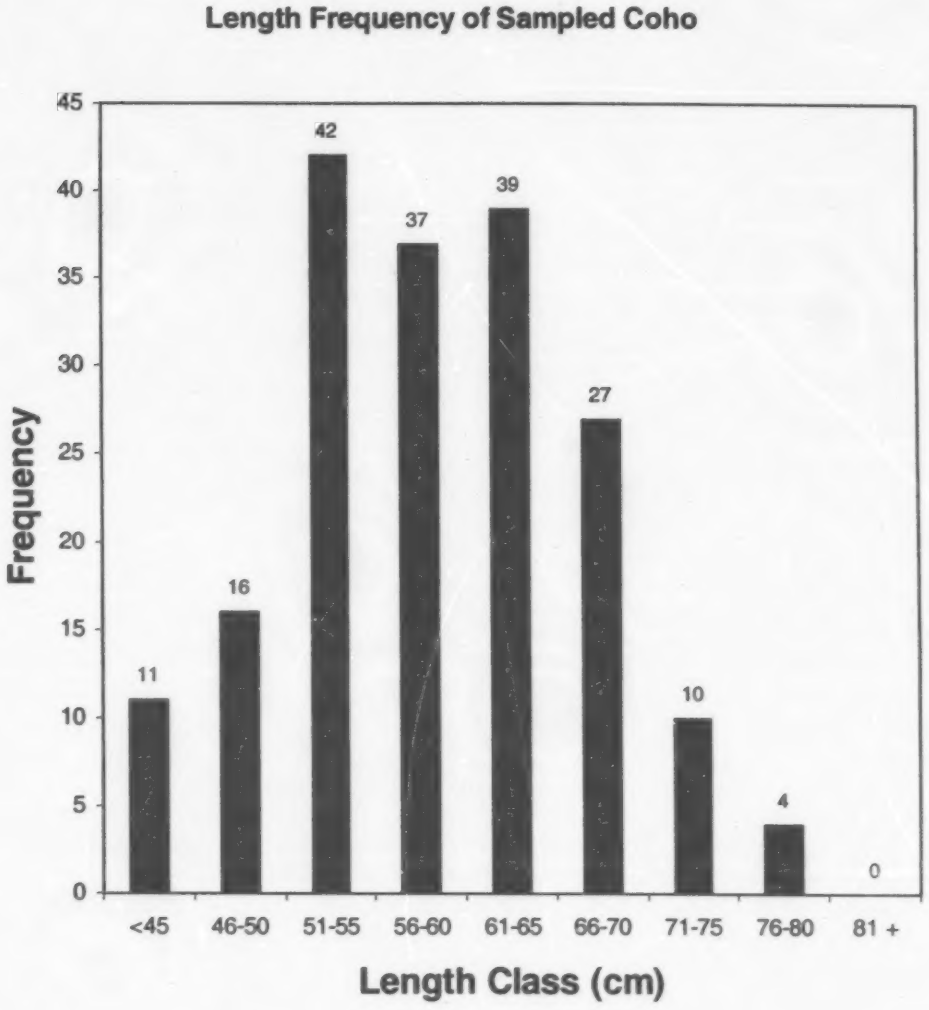


Figure 20. Length frequency distribution of coho salmon sampled in the Strait of Georgia Creel Survey, 2000.

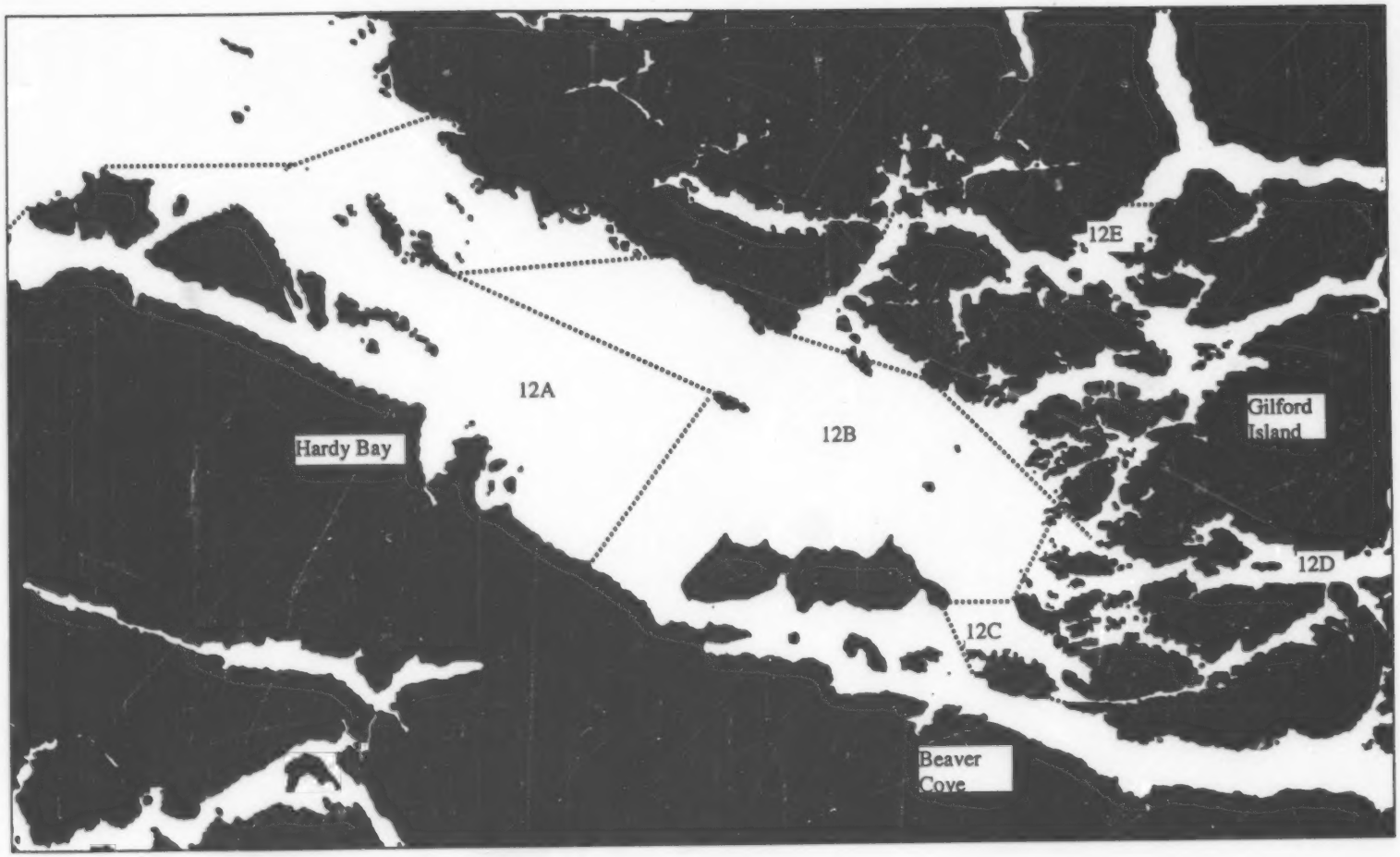


Figure 21. Statistical sub area map for the Northern Vancouver Island creel survey.

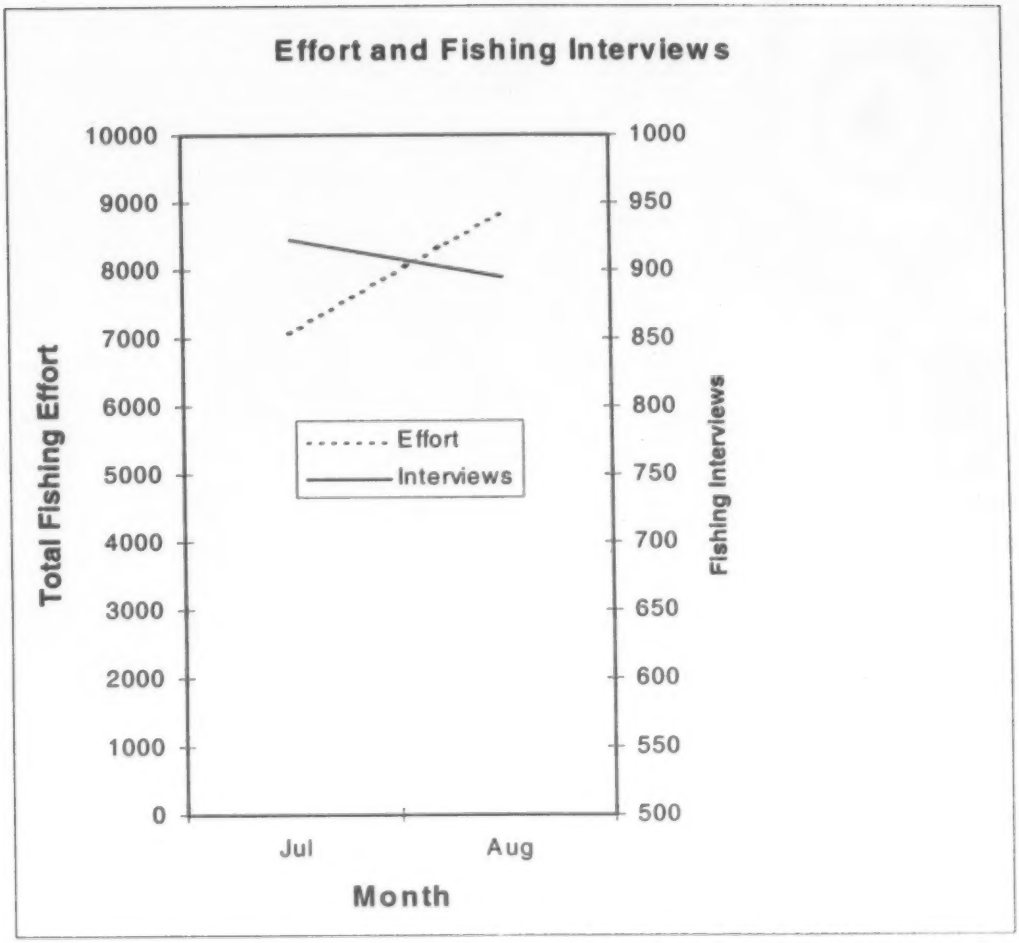


Figure 22. Comparison of monthly total fishing effort and monthly fishing interviews, Northern Vancouver Island, 2000.

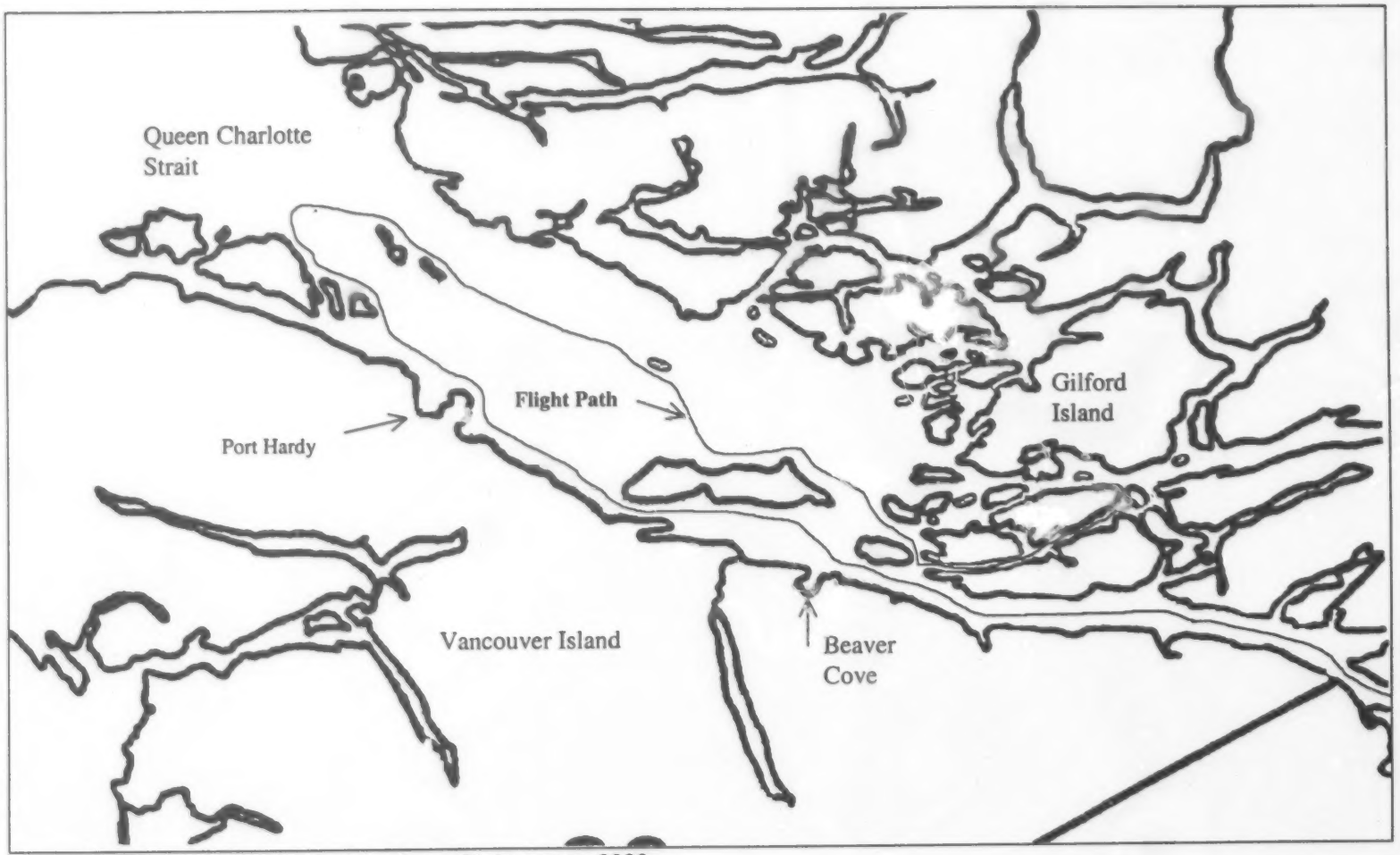


Figure 23. Northern Vancouver Island overflight routes, 2000.

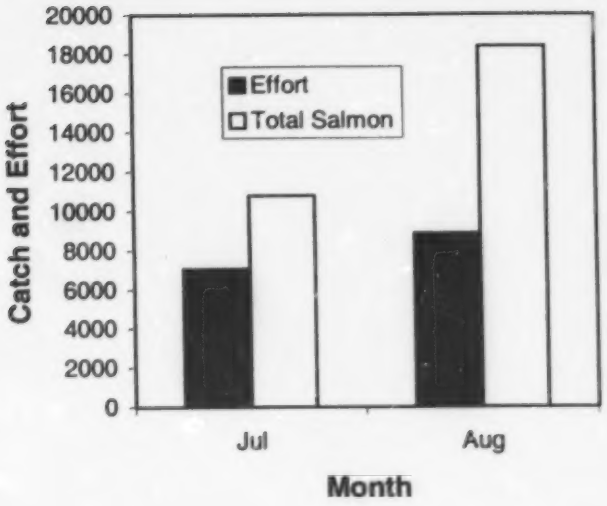


Figure 24. Total salmon catch and effort (boat trips) by month for Northern Vancouver Island, 2000.

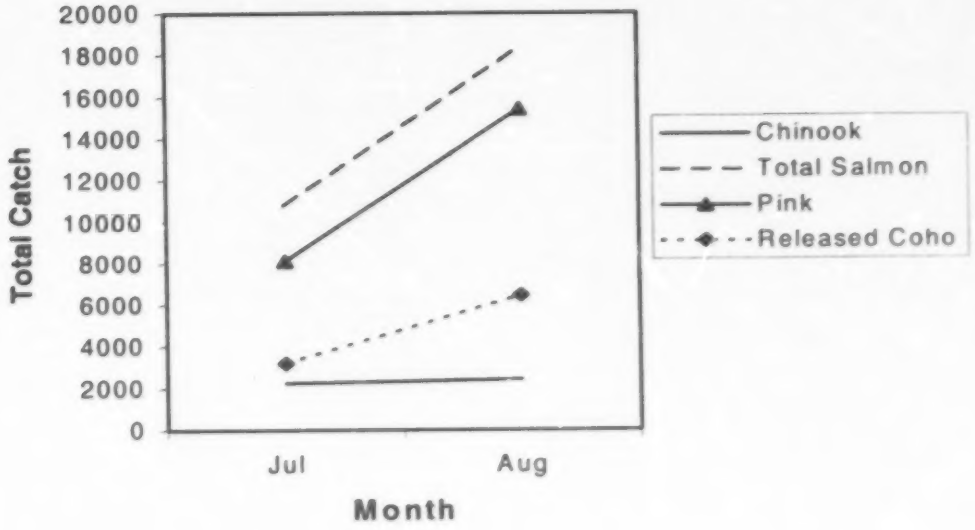


Figure 25. Comparison of monthly salmon catch between major target species in Northern Vancouver Island, 2000.

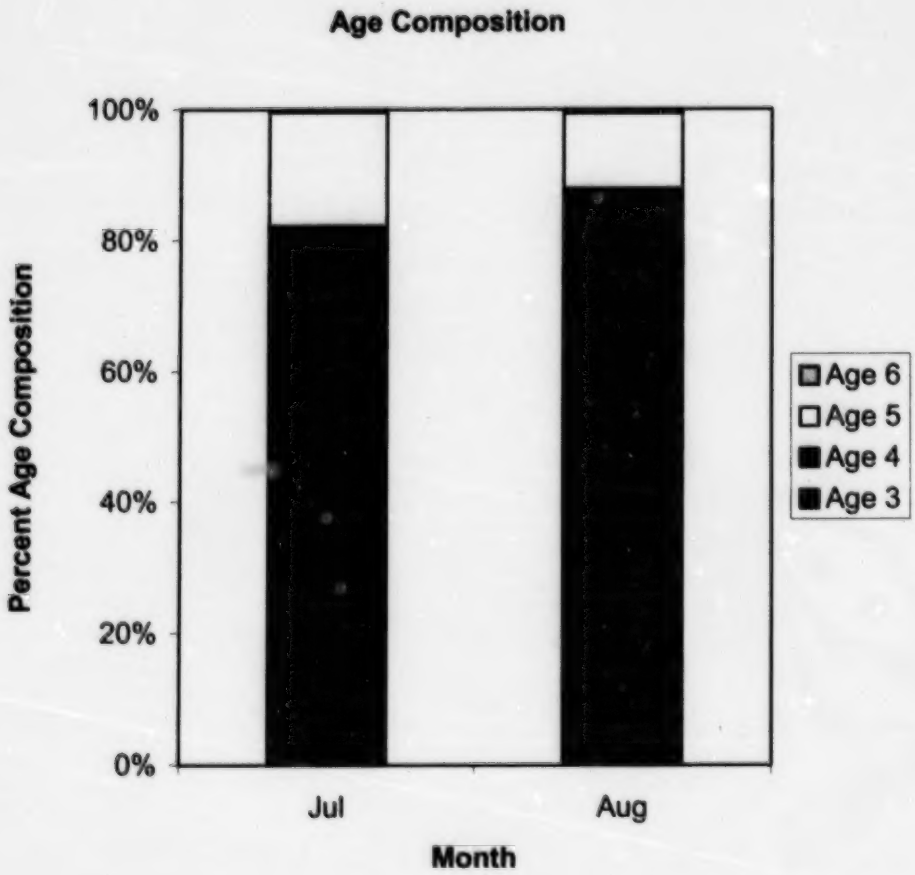


Figure 26. Monthly percent age composition of chinook salmon sampled in the Northern Vancouver Island Creel Survey, 2000.

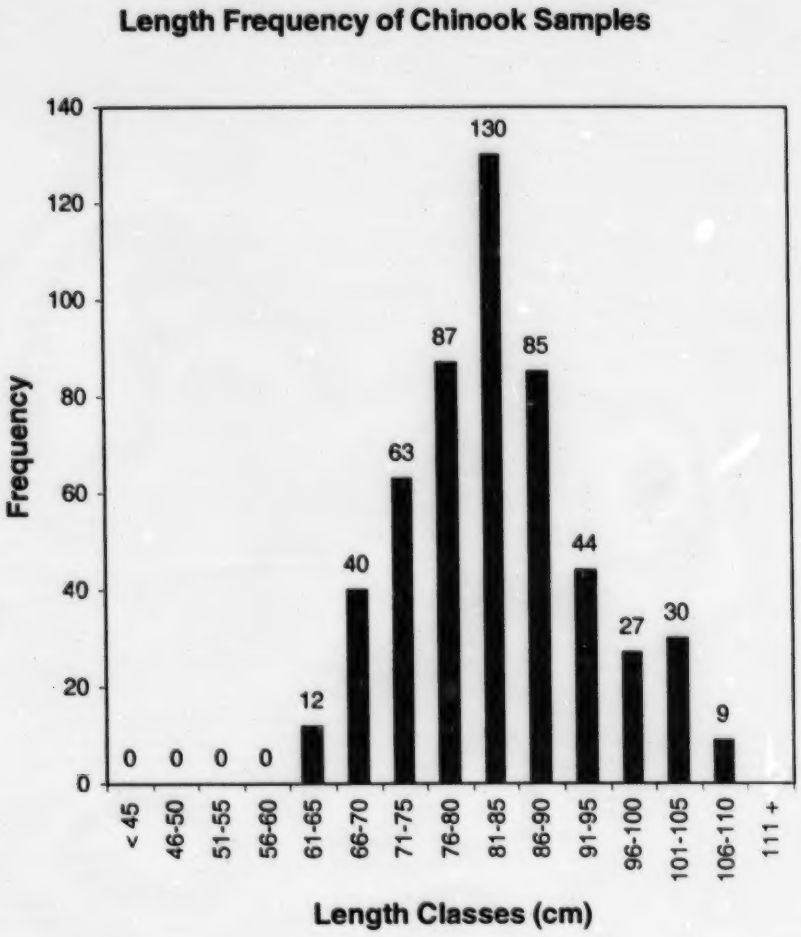


Figure 27. Length frequency distribution of chinook salmon sampled in the Northern Vancouver Island Creel Survey, 2000.

APPENDICES

APPENDIX A. PREVIOUS STRAIT OF GEORGIA AND NORTHERN VANCOUVER ISLAND CREEL SURVEY REPORTS.

Shardlow, T. F., K. K. English, T. Hoyt, G. E. Gillespie, and T. A. Calvin. 1989. Strait of Georgia Creel Survey sport fishery statistics, 1983. Can. Manuscr. Rep. Fish. Aquat. Sci. 1872: 53 p.

Shardlow, T. F. and L. D. Collicutt. 1989 a. Strait of Georgia sport fishery creel survey statistics for salmon and groundfish, 1984. Can. Manuscr. Rep. Fish. Aquat. Sci. 2032: 61 p.

Shardlow, T. F. and L. D. Collicutt. 1989 b. Strait of Georgia sport fishery creel survey statistics for salmon and groundfish, 1985. Can. Manuscr. Rep. Fish. Aquat. Sci. 2033: 60 p.

Shardlow, T. F. and L. D. Collicutt. 1989 c. Strait of Georgia sport fishery creel survey statistics for salmon and groundfish, 1986. Can. Manuscr. Rep. Fish. Aquat. Sci. 2034: 61 p.

Shardlow, T. F. and L. D. Collicutt. 1989 d. Strait of Georgia sport fishery creel survey statistics for salmon and groundfish, 1987. Can. Manuscr. Rep. Fish. Aquat. Sci. 2035: 62 p.

Shardlow, T. F. and L. D. Collicutt. 1989 e. Strait of Georgia sport fishery creel survey statistics for salmon and groundfish, 1988. Can. Manuscr. Rep. Fish. Aquat. Sci. 2036: 63 p.

Collicutt, L. D. and T. F. Shardlow. 1990. Strait of Georgia sport fishery creel survey statistics for salmon and groundfish, 1989. Can. Manuscr. Rep. Fish. Aquat. Sci. 2087: 75 p.

Collicutt, L. D., B. G. Naito, P. Ryall, and L. Lapi. 1992. Northern Vancouver Island sport fishery creel survey statistics for salmon and groundfish, 1991. Can. Tech. Rep. Fish. Aquat. Sci. 1857: 121 p.

Collicutt, L. D. and T. F. Shardlow. 1992. Strait of Georgia sport fishery creel survey statistics for salmon and groundfish, 1990. Can. Manuscr. Rep. Fish. Aquat. Sci. 2109: 76 p.

Collicutt, L. D. and T. F. Shardlow. 1995. Strait of Georgia sport fishery creel survey statistics for salmon and groundfish, 1991. Can. Manuscr. Rep. Fish. Aquat. Sci. 2137: 75 p.

Collicutt, L. D. and T. F. Shardlow. 1994. Strait of Georgia sport fishery creel survey statistics for salmon and groundfish, 1992. Can. Manuscr. Rep. Fish. Aquat. Sci. 2221: 75 p.

Collicutt, L. D., T. F. Shardlow, B. D. Smith, and G. E. Gillespie. 1994. Northern Vancouver Island sport fishery creel survey statistics for salmon and groundfish, 1992. Can. Tech. Rep. Fish. Aquat. Sci. 1973: 53 p.

Collicutt, L. D., T. F. Shardlow, B. D. Smith, and G. E. Gillespie. 1994. Northern Vancouver Island sport fishery creel survey statistics for salmon and groundfish, 1993. Can. Manuscr. Rep. Fish. Aquat. Sci. 1974: 53 p.

Hardie, D. C., D. A. Nagtegaal, and L. Nagy. 1999. Strait of Georgia sport fishery and Northern Vancouver Island creel survey statistics for salmon and groundfish, 1998. Can. Manuscr. Rep. Fish. Aquat. Sci. 2500: 92 p.

Hardie, D. C., D. A. Nagtegaal, and L. Nagy. 2001. Strait of Georgia sport fishery and Northern Vancouver Island creel survey statistics for salmon and groundfish, 1999. Can. Manuscr. Rep. Fish. Aquat. Sci. 2553: 111 p.

APPENDIX B. STRAIT OF GEORGIA CREEL SURVEY STUDY AREA.

The Strait of Georgia Creel Survey study area and landing site locations used in 1998 are shown in Appendix B-2. The study area includes those waters of Juan de Fuca Strait and the Strait of Georgia bounded in the south by a line from Sheringham Pt. on Vancouver Island due south to an intersection with the International Boundary and along the International Boundary to the B.C, Mainland coast at Blaine (Boundary Bay) and in the northern by the following 3 boundary lines:

1) Discovery Passage from Granite Pt. on Quadra Island to the stream mouth west of Moriarty Pt. on Vancouver Island.

2) Okisollo Channel from Granite Pt. on Quadra Island due northern to Sonora Island.

3) Cordero Channel from Burnt Bluff on the mainland 214° passing west of Dent Island to Sonora Island.

The area for which the Strait of Georgia Creel Survey statistics apply includes the above listed administrative area with the exception of the following areas:

1) Bute Inlet above a line from Lawrence Pt. running across the inlet. This area coincides with management units 13-21 and 13-22.

2) Waters of Pryce Channel, Waddington Channel, Pendrell Sound, Homfray Channel and Toba Inlet bounded by a line drawn from Horace Head on East Redonda Island at the south end of Waddington Channel to the northern point of Roscoe Bay on West Redonda Island and a line drawn within Homfray Channel from Price Pt. on the eastern shore of the channel by a line drawn from George Head at the easterly entrance of Ramsay Arm to Sutil Pt. on Cortes Island.

3) Hotham Sound above a line drawn from Elephant Pt. on the western shore of the Sound to the southern point of Granville Bay on the eastern shore of the Sound.

4) Jervis Inlet above a line drawn within Prince of Whales Reach from the mouth of Treat Creek on the east shore across the Reach to the Summit (1625') at the head of Goliath Bay.

5) Sechelt Inlet including Narrows Inlet and Salmon Inlet above a line drawn within Skookumchuck Narrows from the "dog-leg" point south-east of the Egmont Pt. 224° across the Narrows to Sechelt Peninsula.

APPENDIX C. METHODS AND EQUATIONS USED IN ANALYSIS OF CATCH AND EFFORT STATISTICS FOR THE STRAIT OF GEORGIA AND NORTHERN VANCOUVER ISLAND SPORT FISHERY CREEL SURVEY.

Description of terms, variables and subscripts used in this report.

DESCRIPTION OF TERMS

Shift/Stint - Represents a combination of a day type and landing site which was sampled on a single day. i.e. one sampling stint performed by an interviewer.

Work block - Represents one of four possible periods at a particular site of a given day type.
Work Block 1 is before 11 am
Work Block 2 is 11 am - 3 pm
Work Block 3 is 3 pm - 7 pm
Work Block 4 is after 7 pm

Day type There are two possible day types: weekdays and weekends; holidays are considered to be weekend days.

Time block - Each day is divided into 16 time blocks which are:
1) before 7 am
2) 7:00 - 7:59 am
3) 8:00 - 8:59 am

.

15) 8:00 - 8:59 pm
16) after 9 pm

DESCRIPTION OF VARIABLES

A	-	Number of boats actively fishing
B	-	Number of boats observed on a flight
C	-	Catch
C'	-	Catch of marked salmon
CPE	-	Catch per boat trip
E	-	Effort (estimated total number of boat trips)
I	-	Number of boats interviewed and fo 19A→ been fishing 19B
L	-	Number of boats landing
n	-	Number sampled
N	-	Population size from which n samples were observed
P	-	Proportion
T	-	Number of boat trips
V	-	Number found to be marked
W1	-	Weighting factor to expand for all possibl 19B at each site
W2	-	Weighting factor to expand for all boats that landed in each work

DESCRIPTION OF SUBSCRIPTS

a	-	age
g	-	a set of landing sites
d	-	day type
i	-	site
j	-	work block
k	-	stint
l	-	landing time block
m	-	month

q		the next boat landing at site i and upon interviewing, found to have been fishing (q ranges from 1 to n)
r	-	species
s	-	sub-Statistical Area
t	-	time block
u	-	flight
x	-	region
y	-	annual

The description of terms, variables and subscripts used in the data analysis is given in Table C-1.

Calculation of Catch and Effort Statistics

To estimate the monthly catch and effort, three components had to be calculated from a month's data:

(1) the weighted mean daily fishing pattern from interview data,
(2) the weighted mean catch per unit effort from interview data and
(3) the mean sport count from overflight data.

The equations used to estimate the means and variances for all catch and effort statistics are shown below.

Weighting factors used to estimate the daily fishing activity were calculated using the equations derived from DPA Consulting Ltd. (1982).

The data obtained from each shift were multiplied by the following weighting factor (W1) to expand for all possible stints at each site. The formula reads:

$$W1_{dij} = \frac{N_d}{n_{dij}} \qquad (1)$$

where N_d is the total number of days of type d in that month and n_{dij} is the number of times the jth work block at the ith site was sampled on type d days.

The interviews aggregated by work block were multiplied by the weighting factor W2 to expand for all boats that landed in each work block. The formula reads:

$$W2_{dijk} = \frac{L_{dijk}}{l_{dijk}} \qquad (2)$$

where L_{dijk} is the number of boats landed and I_{dijk} is the number of boats interviewed on the kth stint in the jth work block at the ith site on a day type d.

Therefore, the following equations can be used to calculate an unbiased estimate of the total monthly catch ($\hat{C}_{dgr}$), fishing trips ($\hat{T}_{dg}$) and fishing activity in time block $\hat{A}_{dgt}$ for each day type (d) where g is a set of landing sites (i). These formulas read:

$$\hat{C}_{dgr} = \sum_i \sum_j \left[W1_{dij} \sum_k \sum_q (W2_{dijk} C_{dijklqr}) \right] \tag{3}$$

$$\hat{T}_{dg} = \sum_i \sum_j \left[W1_{dij} \sum_k \sum_q (W2_{dijk}) \right] \tag{4}$$

$$\hat{A}_{dgt} = \sum_i \sum_j \left[W1_{dij} \sum_k \sum_q (W2_{dijk} A_{dijkqt}) \right] \tag{5}$$

where C_{dijkqr} is the catch of species r by the qth fishing party, and A_{dijkqt} can equal 0 or 1, thereby indicating whether the qth fishing party was actively fishing in time block t. Thus, the mean monthly catch per unit effort (CPE_{dgr}) measured in terms of numbers of fish kept per completed boat trip, and proportion of daily fishing effort active during the hour of the aerial survey (P_{dgt}) can be calculated with the following equations:

$$CPE_{dgr} = \frac{\hat{C}_{dgr}}{\hat{T}_{dg}} \tag{6}$$

$$P_{dgt} = \frac{\hat{A}_{dgt}}{\hat{T}_{dg}} \tag{7}$$

where CPE_{dgr} and P_{dgt} are calculated for each day type (d) and group of landing sites (g).

The groups of landing sites reflect geographic areas with similar catch rates and/or activity patterns.

The estimated mean number of boats fishing during the hour of the sport boat count by overflight was calculated for each sub-Statistical Area using the following equation:

$$\overline{B}_{dst} = \frac{\sum_{u} B_{sdtu}}{n_{ds}} \tag{8}$$

where B_{sdtu} is the number of boats observed fishing on flight u at time t, in sub-Statistical Area s for day type d.

The mean sport boat count at the time of the overflight ($\overline{B}_{dst}$) and proportion of daily fishing effort active during the hour of the overflight (P_{dgt}) were used in the following equation to calculate the total fishing effort for sub-Statistical Area s on day type d:

$$E_{ds} = \overline{B}_{dst} \frac{1}{P_{dgt}} N_d \tag{9}$$

where N_d is the number of type d days in the month. Interview data for the sub-Statistical Areas fished (s) by anglers landing at each of the sites (i) within a landing group (g) were used to select the proportions (P_{dgt}) that are appropriate for each mean boat count ($\overline{B}_{dst}$).

The estimate for total effort by sub-Statistical Area and day type (E_{ds}) and the weighted catch per boat trip for a group of landing sites by day type, area and species (CPE_{dgr}) were used to calculate total catch for each species (r) and each sub-Statistical Area (s):

$$C_{sr} = \sum_{d} (E_{ds} CPE_{dgr}) \tag{10}$$

The interview data were also used to select the catch per effort estimates (CPE_{dgr}) that should be applied to the effort estimates (E_{ds}) for a specific sub-Statistical Area (s).

Variance of Total Fishing Effort

The variance estimate for the number of boat trips in each sub-area was:

$$Var(b_{dsu}) = \frac{(N_d - n_{ds})}{(N_d - 1)} \times \frac{\sum_{u=1}^{n} b_{dsu}^2 - \frac{\left(\sum_{u=1}^{n} b_{dsu}\right)^2}{n_{ds}}}{(n_{ds} - 1)} \quad (11)$$

where b_{dsu} is the estimated number of boat trips on aerial survey u, in sub-area s, on day type d and n is the number of days when boat counts were conducted in sub-area s on type d days; and N_d is the total number of type d days in the month.

The variance estimate for the total number of boat trips in a given month for each day type and sub area was:

$$Var(E_{b_{ds}}) = N_d^2 \times Var(b_{ds}) \quad (12)$$

Variance of Total Catch

The variance estimate for mean catch per effort was:

$$Var(CPE_{dsi}) = \frac{\sum_{i=1}^{ni} cpe_{dsi}^2 - \frac{\left(\sum_{i=1}^{ni} \times cpe_{dsi}\right)^2}{ni_{ds}}}{(ni_{ds} - 1)} \quad (13)$$

where cpe_{dsi} is the catch per effort reported in interview i, for the sub-area or group of sub-areas s, on the day type d; and ni_{ds} is the number of interviews for that stratum.

The variance for the total catch in each stratum was estimated by combining the variance for fishing effort and variance for catch per effort using the significant terms of a Taylor series expansion (Cochran 1963):

$$Var(C_s) = \sum_{d=1}^{2} \left(E_{ds}^2 \times Var(CPE)_{ds} + CPE_{ds}^2 \times Var(E)_{ds} + Var(E_{ds}) \times Var(CPE)_{ds} \right) \quad (14)$$

Estimation of Marked Chinook and Coho Salmon

The incidence of marked (adipose-clipped) chinook and coho was recorded in each interview. The proportion of marks observed for each region, month and species (P_{xmr}) was calculated as:

$$P_{xmr} = \frac{V_{xmr}}{n_{xmr}} \quad (15)$$

where V is the number of marked fish observed and n is the number of fish inspected by region (x), month (m) and species (r).

The variance of each proportion was calculated as:

$$S^2_{P_{xmr}} = \frac{P_{xmr}(1 - P_{xmr})}{n_{xmr}} \quad (16)$$

Monthly catch estimates of marked salmon were calculated as:

$$C'_{xmr} = P_{xmr} C_{xmr} \quad (17)$$

where C_{xmr} is the estimated catch of species r in region x and month m.

The variance of the marked catch estimates was calculated as:

$$S^2_{C'_{xmr}} = P^2_{xmr} S^2_{C_{xmr}} + C^2_{xmr} S^2_{P_{xmr}} + S^2_{C_{xmr}} S^2_{P_{xmr}} \quad (18)$$

where $S^2_{C_{xmr}}$ is the variance of the catch estimates of species r in region x and month m.

The estimate annual proportions of marked salmon caught in each region (weighted by the corresponding regional annual catch estimates) were calculated as:

$$P_{xry} = \frac{C'_{xry}}{C_{xry}} \tag{19}$$

where

$$C'_{xry} = \sum_{m} C'_{xmr} \quad and \quad C_{xry} = \sum_{m} C_{xmr} \tag{20}$$

The variance of the annual proportions was calculated as:

$$S^2{}_{P_{xry}} = \left(\frac{C'_{xry}}{C_{xry}}\right)^2 \left[\frac{S^2{}_{C'_{xry}}}{(C'_{xry})^2} + \frac{S^2{}_{C_{xry}}}{(C_{xry})^2}\right] \tag{21}$$

where $S^2{}_{C_{xry}}$ is the variance of the annual estimated catch of species r in region x.

Estimation of Age Composition of Chinook Catch

Scale samples and length measurements were taken in a sub-sampling program during the interview process. Ages used in this report represent saltwater age of the fish.

The proportion of chinook at each age and month (P_{am}) was calculated as:

$$P_{am} = \frac{a_m}{n_m} \tag{22}$$

where a_m represents the number of fish observed at age a during month m, and n_m is the total number of fish bio-sampled in that month.

The variance of each proportion was calculated as:

$$S^2{}_{am} = \frac{P_{am}(1 - P_{am})}{n_m} \tag{23}$$

The catch at age of chinook in each month was calculated as:

$$C_{am} = P_{am} C_m \tag{24}$$

where C_m is the estimated catch of chinook salmon in a given month m.

The variance of the catch at age estimate was calculated as:

$$S^2_{Cam} = P^2_{am} S^2_{Cm} + C^2_m S^2_{Pam} + S^2_{Cm} S^2_{Pam} \tag{25}$$

where S^2_{Cm} is the variance of the month catch estimate C_m.

The annual catch at age was calculated as:

$$C_{ay} = \sum_m C_{am} \tag{26}$$

with a variance:

$$S^2_{Cay} = \sum_m S^2_{Cam} \tag{27}$$

The annual proportion at age (weighted by monthly catch) was calculated as:

$$P_{ay} = \frac{C_{ay}}{C_y} \tag{28}$$

with a variance:

$$S^2_{Pay} = \left(\frac{C_{ay}}{C_y} \right)^2 \left[\frac{S^2_{Cay}}{(C_{ay})^2} + \frac{S^2_{Cy}}{(C_y)^2} \right] \tag{29}$$

APPENDIX D-1. STRAIT OF GEORGIA FISHING EFFORT (NUMBER OF BOAT TRIPS) SUMMARY, 2000.

Month		Statistical Area 13	14	15	16	17	18	19	28	29	Total
Jan -	Estimate	0	0	0	0	0	0	2778	0	0	2778
Mar	STD	0	0	0	0	0	0	329	0	0	329
Apr	Estimate	719	687	395	2037	1751	547	1976	1447	773	10332
	STD	181	256	253	1015	418	186	316	211	135	1251
May	Estimate	320	331	116	966	954	146	3573	665	811	7882
	STD	96	92	37	179	223	52	913	95	283	1013
Jun	Estimate	5161	2966	574	2733	3830	399	8589	1155	1091	26498
	STD	1239	361	124	305	785	70	545	220	233	1672
Jul	Estimate	11237	4673	991	3356	4228	922	8274	2724	651	37056
	STD	957	406	112	362	551	139	805	383	116	1535
Aug	Estimate	13235	11870	914	5740	3799	1857	7484	2236	948	48083
	STD	890	1988	140	640	331	250	926	210	188	2506
Sep	Estimate	7110	2583	358	1638	2707	4717	5618	1480	2342	28553
	STD	682	395	80	224	288	928	625	377	520	1557
Oct	Estimate	2730	1091	0	0	0	0	1885	0	0	5706
	STD	491	138	0	0	0	0	341	0	0	614
Nov -	Estimate	0	0	0	0	0	0	3910	0	0	3910
Dec	STD	0	0	0	0	0	0	484	0	0	484
Total	Catch	40512	24201	3348	16470	17269	8588	44087	9707	6616	170798
	STD	1998	2120	345	1321	1156	993	1894	659	687	4143

APPENDIX D-2. STRAIT OF GEORGIA CHINOOK CATCH SUMMARY, 2000.

		Statistical Area									
Month		13	14	15	16	17	18	19	28	29	Total
Jan -	Estimate	0	0	0	0	0	0	1794	0	0	1794
Mar	STD	0	0	0	0	0	0	250	0	0	250
Apr	Estimate	15	33	63	77	148	101	99	249	249	1034
	STD	14	30	80	32	69	56	39	121	197	267
May	Estimate	16	70	14	54	117	3	640	43	115	1072
	STD	8	28	7	19	43	1	266	33	71	283
Jun	Estimate	1474	534	253	65	482	5	2181	74	110	5178
	STD	466	128	105	32	148	3	295	26	33	597
Jul	Estimate	3309	833	196	123	321	48	1249	215	58	6352
	STD	402	197	70	43	66	18	211	61	42	512
Aug	Estimate	4767	3690	118	537	529	233	1512	97	29	11512
	STD	473	841	33	188	97	66	270	38	6	1027
Sep	Estimate	565	343	36	17	58	652	787	71	549	3078
	STD	119	112	19	13	22	221	207	43	209	406
Oct	Estimate	71	19	0	0	0	0	344	0	0	434
	STD	25	14	0	0	0	0	98	0	0	102
Nov -	Estimate	0	0	0	0	0	0	2296	0	0	2296
Dec	STD	0	0	0	0	0	0	433	0	0	433
Total	Catch	10217	5522	680	873	1655	1042	10902	749	1110	32750
	STD	786	881	154	199	207	238	761	153	301	1500

APPENDIX D-3. STRAIT OF GEORGIA COHO CATCH SUMMARY, 2000.

Month		Statistical Area 13	14	15	16	17	18	19	28	29	Total
Jan -	Estimate	0	0	0	0	0	0	0	0	0	0
Mar	STD	0	0	0	0	0	0	0	0	0	0
Apr	Estimate	0	0	0	0	0	0	0	0	0	0
	STD	0	0	0	0	0	0	0	0	0	0
May	Estimate	0	0	0	0	0	0	14	0	0	14
	STD	0	0	0	0	0	0	21	0	0	21
Jun	Estimate	0	0	0	0	0	0	0	42	16	58
	STD	0	0	0	0	0	0	0	43	8	44
Jul	Estimate	0	4	10	6	9	0	15	1345	18	1407
	STD	0	6	7	7	6	0	16	308	10	309
Aug	Estimate	64	0	0	0	0	0	190	1069	193	1516
	STD	45	0	0	0	0	0	91	207	61	238
Sep	Estimate	855	57	0	0	0	0	50	306	31	1299
	STD	181	32	0	0	0	0	37	131	34	231
Oct	Estimate	74	0	0	0	0	0	263	0	0	337
	STD	32	0	0	0	0	0	105	0	0	110
Nov -	Estimate	0	0	0	0	0	0	47	0	0	47
Dec	STD	0	0	0	0	0	0	48	0	0	48
Total	Catch	993	61	10	6	9	0	579	2762	258	4678
	STD	189	33	7	7	6	0	154	396	71	472

APPENDIX D-4. STRAIT OF GEORGIA CHUM CATCH SUMMARY, 2000.

Month		Statistical Area 13	14	15	16	17	18	19	28	29	Total
Jan -	Estimate	0	0	0	0	0	0	0	0	0	0
Mar	STD	0	0	0	0	0	0	0	0	0	0
Apr	Estimate	0	0	0	0	0	0	0	0	0	0
	STD	0	0	0	0	0	0	0	0	0	0
May	Estimate	0	0	0	0	0	0	0	0	0	0
	STD	0	0	0	0	0	0	0	0	0	0
Jun	Estimate	0	0	0	0	0	0	0	0	0	0
	STD	0	0	0	0	0	0	0	0	0	0
Jul	Estimate	17	0	0	0	0	0	0	0	0	17
	STD	17	0	0	0	0	0	0	0	0	17
Aug	Estimate	65	0	0	0	0	0	17	0	0	82
	STD	39	0	0	0	0	0	17	0	0	43
Sep	Estimate	995	5	0	0	0	0	0	0	0	1000
	STD	289	7	0	0	0	0	0	0	0	289
Oct	Estimate	1452	0	0	0	0	0	7	0	0	1459
	STD	365	0	0	0	0	0	6	0	0	365
Nov -	Estimate	0	0	0	0	0	0	0	0	0	0
Dec	STD	0	0	0	0	0	0	0	0	0	0
Total	Catch	2529	5	0	0	0	0	24	0	0	2558
	STD	467	7	0	0	0	0	18	0	0	468

APPENDIX D-5. STRAIT OF GEORGIA PINK CATCH SUMMARY, 2000.

Month		Statistical Area									Total
		13	14	15	16	17	18	19	28	29	
Jan -	Estimate	0	0	0	0	0	0	0	0	0	0
Mar	STD	0	0	0	0	0	0	0	0	0	0
Apr	Estimate	0	0	0	0	0	0	0	0	0	0
	STD	0	0	0	0	0	0	0	0	0	0
May	Estimate	0	0	0	0	0	0	0	0	0	0
	STD	0	0	0	0	0	0	0	0	0	0
Jun	Estimate	0	3	0	0	0	0	0	0	0	3
	STD	0	4	0	0	0	0	0	0	0	4
Jul	Estimate	3328	0	0	0	9	2	186	0	0	3525
	STD	768	0	0	0	6	1	65	0	0	771
Aug	Estimate	5556	0	0	0	0	0	53	0	0	5609
	STD	917	0	0	0	0	0	27	0	0	917
Sep	Estimate	624	0	0	0	0	0	0	0	0	624
	STD	203	0	0	0	0	0	0	0	0	203
Oct	Estimate	10	0	0	0	0	0	0	0	0	10
	STD	11	0	0	0	0	0	0	0	0	11
Nov -	Estimate	0	0	0	0	0	0	0	0	0	0
Dec	STD	0	0	0	0	0	0	0	0	0	0
Total	Catch	9518	3	0	0	9	2	239	0	0	9771
	STD	1213	4	0	0	6	1	70	0	0	1215

APPENDIX D-6. STRAIT OF GEORGIA SOCKEYE CATCH SUMMARY, 2000.

Month		Statistical Area									Total
		13	14	15	16	17	18	19	28	29	
Jan -	Estimate	0	0	0	0	0	0	0	0	0	0
Mar	STD	0	0	0	0	0	0	0	0	0	0
Apr	Estimate	0	0	0	0	0	0	0	0	0	0
	STD	0	0	0	0	0	0	0	0	0	0
May	Estimate	0	0	0	0	0	0	0	0	0	0
	STD	0	0	0	0	0	0	0	0	0	0
Jun	Estimate	0	0	0	0	0	0	23	0	0	23
	STD	0	0	0	0	0	0	24	0	0	24
Jul	Estimate	3032	8	0	0	0	0	290	0	0	3330
	STD	771	7	0	0	0	0	91	0	0	776
Aug	Estimate	2047	11	0	0	0	0	619	23	225	2925
	STD	502	13	0	0	0	0	153	20	126	540
Sep	Estimate	34	0	0	0	0	0	0	55	0	89
	STD	34	0	0	0	0	0	0	38	0	51
Oct	Estimate	0	0	0	0	0	0	0	0	0	0
	STD	0	0	0	0	0	0	0	0	0	0
Nov -	Estimate	0	0	0	0	0	0	0	0	0	0
Dec	STD	0	0	0	0	0	0	0	0	0	0
Total	Catch	5113	19	0	0	0	0	932	78	225	6367
	STD	921	15	0	0	0	0	180	43	126	948

APPENDIX D-7. STRAIT OF GEORGIA CATCH SUMMARY FOR TOTAL SALMONIDS, 2000.

Month		Statistical Area 13	14	15	16	17	18	19	28	29	Total
Jan -	Estimate	0	0	0	0	0	0	1794	0	0	1794
Mar	STD	0	0	0	0	0	0	250	0	0	250
Apr	Estimate	15	33	63	77	148	101	99	249	249	1034
	STD	14	30	80	32	69	56	39	121	197	267
May	Estimate	16	70	14	54	117	3	654	43	115	1086
	STD	8	28	7	19	43	1	275	33	71	291
Jun	Estimate	1474	537	253	65	482	5	2205	116	126	5263
	STD	466	129	105	32	148	3	299	53	38	601
Jul	Estimate	9686	845	206	129	340	50	1741	1561	76	14634
	STD	1683	198	70	44	68	18	277	334	43	1753
Aug	Estimate	12498	3701	118	537	529	233	2391	1189	448	21644
	STD	1493	842	33	188	97	66	397	216	143	1792
Sep	Estimate	3074	405	36	17	58	652	837	432	580	6091
	STD	477	118	19	13	22	221	212	142	215	635
Oct	Estimate	1606	20	0	0	0	0	614	0	0	2240
	STD	392	14	0	0	0	0	163	0	0	425
Nov -	Estimate	0	0	0	0	0	0	2344	0	0	2344
Dec	STD	0	0	0	0	0	0	434	0	0	434
Total	Catch	28369	5611	690	879	1674	1044	12679	3590	1594	56130
	STD	2379	884	154	200	207	238	851	444	337	2764

APPENDIX D-8. STRAIT OF GEORGIA SUMMARY FOR TOTAL RELEASED SALMONIDS, 2000*.

Month		Statistical Area 13	14	15	16	17	18	19	28	29	Total
Jan -	Estimate	0	0	0	0	0	0	1701	0	0	1701
Mar	STD	0	0	0	0	0	0	223	0	0	223
Apr	Estimate	354	311	230	51	182	70	119	394	623	2334
	STD	174	212	222	48	121	54	56	168	196	463
May	Estimate	222	29	12	5	93	1	1986	103	227	2678
	STD	85	16	11	3	40	1	1151	70	125	1164
Jun	Estimate	1736	335	249	567	444	15	3356	107	179	6988
	STD	780	113	101	214	180	6	780	41	60	1150
Jul	Estimate	4957	6044	2080	1168	3330	105	2300	2211	398	22593
	STD	703	1125	379	330	620	64	474	474	180	1698
Aug	Estimate	14592	23873	2718	4560	9487	1144	6152	994	368	63888
	STD	1643	4925	560	1524	1402	415	1056	192	100	5735
Sep	Estimate	10061	6401	549	414	4197	5695	5527	854	4482	38180
	STD	1519	1394	173	182	732	1811	1168	243	1282	3346
Oct	Estimate	4224	1236	0	0	0	0	1600	0	0	7060
	STD	740	436	0	0	0	0	392	0	0	944
Nov -	Estimate	0	0	0	0	0	0	2802	0	0	2802
Dec	STD	0	0	0	0	0	0	436	0	0	436
Total	Catch	36146	38229	5838	6765	17733	7030	25543	4663	6277	148224
	STD	2587	5264	739	1585	1713	1860	2244	596	1320	7141

*Includes chinook, coho, chum, pink, sockeye, steelhead and cutthroat trout.

APPENDIX D-9. STRAIT OF GEORGIA HALIBUT CATCH SUMMARY, 2000.

Month		Statistical Area									Total
		13	14	15	16	17	18	19	28	29	
Jan -	Estimate	0	0	0	0	0	0	14	0	0	14
Mar	STD	0	0	0	0	0	0	11	0	0	11
Apr	Estimate	0	0	0	0	0	0	42	0	0	42
	STD	0	0	0	0	0	1	36	0	0	36
May	Estimate	0	0	0	0	0	2	188	0	0	190
	STD	0	0	0	0	0	1	57	0	0	57
Jun	Estimate	0	0	0	0	0	0	93	0	0	93
	STD	0	0	0	0	0	0	67	0	0	67
Jul	Estimate	12	8	0	0	0	0	54	0	0	74
	STD	12	7	0	0	0	0	41	0	0	43
Aug	Estimate	6	10	0	0	0	0	49	0	0	65
	STD	5	10	0	0	0	0	27	0	0	29
Sep	Estimate	8	0	0	0	0	0	24	0	0	32
	STD	10	0	0	0	0	0	26	0	0	28
Oct	Estimate	0	0	0	0	0	0	13	0	0	13
	STD	0	0	0	0	0	0	15	0	0	15
Nov -	Estimate	0	0	0	0	0	0	20	0	0	20
Dec	STD	0	0	0	0	0	0	23	0	0	23
Total	Catch	26	18	0	0	0	2	497	0	0	543
	STD	16	12	0	0	0	1	114	0	0	116

APPENDIX D-10. STRAIT OF GEORGIA LINGCOD CATCH SUMMARY, 2000.

Month		Statistical Area 13	14	15	16	17	18	19	28	29	Total
Jan -	Estimate	0	0	0	0	0	0	0	0	0	0
Mar	STD	0	0	0	0	0	0	0	0	0	0
Apr	Estimate	16	7	0	0	0	11	0	0	0	34
	STD	18	8	0	0	0	15	0	0	0	25
May	Estimate	0	0	0	6	18	0	32	13	0	69
	STD	0	0	0	8	14	0	24	19	0	35
Jun	Estimate	103	81	0	202	352	22	716	51	49	1576
	STD	49	62	0	77	124	15	479	32	13	508
Jul	Estimate	267	309	17	232	275	53	163	104	4	1424
	STD	96	117	8	56	65	16	63	44	1	191
Aug	Estimate	567	519	4	796	247	93	115	185	70	2596
	STD	158	138	3	362	54	33	51	70	26	433
Sep	Estimate	32	9	1	4	205	23	136	1	6	417
	STD	25	9	1	5	124	16	58	0	7	141
Oct	Estimate	0	0	0	0	0	0	11	0	0	11
	STD	0	0	0	0	0	0	8	0	0	8
Nov -	Estimate	0	0	0	0	0	0	0	0	0	0
Dec	STD	0	0	0	0	0	0	0	0	0	0
Total	Catch	985	925	22	1240	1097	202	1173	354	129	6127
	STD	194	192	9	374	195	45	490	91	30	710

APPENDIX D-11. STRAIT OF GEORGIA ROCKFISH CATCH SUMMARY, 2000.

Month		Statistical Area 13	14	15	16	17	18	19	28	29	Total
Jan -	Estimate	0	0	0	0	0	0	227	0	0	227
Mar	STD	0	0	0	0	0	0	98	0	0	98
Apr	Estimate	1710	35	39	1810	96	111	891	464	80	5236
	STD	666	34	35	1284	36	98	463	242	45	1543
May	Estimate	396	180	19	1174	390	101	797	31	70	3158
	STD	175	130	15	347	147	61	271	37	60	521
Jun	Estimate	1305	447	89	3050	847	285	1386	844	524	8777
	STD	330	143	58	638	287	71	303	342	114	921
Jul	Estimate	2987	322	191	3070	1745	291	1007	695	198	10506
	STD	633	122	71	598	341	73	230	240	96	1010
Aug	Estimate	1790	1170	187	12183	2036	243	733	728	323	19393
	STD	423	241	70	2500	311	64	219	347	76	2601
Sep	Estimate	2209	51	25	601	1606	222	1203	126	207	6250
	STD	623	23	13	278	356	74	364	83	205	883
Oct	Estimate	570	1	0	0	0	0	145	0	0	716
	STD	216	1	0	0	0	0	73	0	0	228
Nov -	Estimate	0	0	0	0	0	0	618	0	0	618
Dec	STD	0	0	0	0	0	0	326	0	0	326
Total	Catch	10967	2206	550	21888	6720	1253	7007	2888	1402	54881
	STD	1264	335	122	2977	667	182	857	601	275	3498

APPENDIX D-12. STRAIT OF GEORGIA CATCH SUMMARY FOR OTHER FINFISH, 2000.

Month		Statistical Area 13	14	15	16	17	18	19	28	29	Total
Jan -	Estimate	0	0	0	0	0	0	0	0	0	0
Mar	STD	0	0	0	0	0	0	0	0	0	0
Apr	Estimate	0	0	0	0	0	0	0	0	0	0
	STD	0	0	0	0	0	0	0	0	0	0
May	Estimate	0	0	0	0	0	0	1	0	0	1
	STD	0	0	0	0	0	0	2	0	0	2
Jun	Estimate	0	0	0	0	0	0	0	0	0	0
	STD	0	0	0	0	0	0	0	0	0	0
Jul	Estimate	0	0	0	0	0	2	2	0	0	4
	STD	0	0	0	0	0	1	3	0	0	3
Aug	Estimate	0	14	0	0	0	0	0	0	0	14
	STD	0	18	0	0	0	0	0	0	0	18
Sep	Estimate	0	0	0	0	0	0	0	0	0	0
	STD	0	0	0	0	0	0	0	0	0	0
Oct	Estimate	0	0	0	0	0	0	4	0	0	4
	STD	0	0	0	0	0	0	4	0	0	4
Nov -	Estimate	0	0	0	0	0	0	142	0	0	142
Dec	STD	0	0	0	0	0	0	143	0	0	143
Total	Catch	0	14	0	0	0	2	149	0	0	165
	STD	0	18	0	0	0	1	143	0	0	144

APPENDIX E-1. TOTAL ESTIMATED EFFORT AND SPORT CATCHES FOR THE STRAIT OF GEORGIA*. Totals include data for all months surveyed.

		Salmon Catch						Salmon Released			Groundfish Catch				
Year	Effort	Chinook	Coho	Chum	Pink	Sockeye	All Salmon	Chinook	Coho	All Salmon	Halibut	Lingcod	Rockfish	Dogfish	Other
1980	510400	204100	393500	0	0	0	609200	0	0	0	0	0	0	0	0
1981	494604	197239	317091	0	0	0	572964	0	0	215556	0	51319	77889	2280	8633
1982	559395	124390	411686	0	2846	0	547196	0	0	578169	0	77035	176302	7214	43126
1983	574257	198433	404031	0	54852	0	668142	0	0	775502	0	73800	[illegible]	4518	94100
1984	651090	369445	443590	0	10229	0	828290	0	0	639676	0	137492	158676	4649	84353
1985	628513	234838	728197	0	91246	0	1062939	0	0	703264	0	77103	134112	4680	58531
1986	582946	181896	571980	919	3145	918	760361	0	0	166862	0	70817	167783	5212	65081
1987	589731	121081	641572	3544	90004	8867	867029	0	0	1068027	0	65789	136270	4110	61497
1988	664517	119117	1084790	4802	8843	16376	1235680	0	0	935330	0	65929	194735	4114	71045
1989	603331	132846	497223	7819	123046	13356	775616	190186	0	1201306	0	52329	199898	3672	57165
1990	543368	111914	630033	2978	11549	30669	792440	221081	0	704554	0	31716	154858	2679	30016
1991	466749	115523	157111	5273	249662	23521	551521	178921	0	622445	0	8214	173383	4972	23469
1992	467559	116581	595554	5927	19085	6745	744564	165710	0	417401	0	5968	135763	1802	32146
1993	528508	127576	861323	3096	173143	23766	1217381	182111	0	526817	0	7239	104009	1907	35218
1994	461129	70839	294767	4279	18476	14054	410352	147571	0	418387	0	6885	162431	1244	35840
1995	323642	62173	86145	4023	183938	5897	347401	112324	0	317735	0	4829	112299	1884	32365
1996	289423	89589	127890	3474	7887	2419	233469	180238	0	366379	0	3733	102818	1497	39786
1997	268797	56332	104953	1761	111124	16887	293605	65421	0	404166	0	4086	87453	2528	52088
1998	162296	20923	1376	3624	6848	4474	38449	34786	20992	2340	2203	3291	84251	0	43565
1999	164282	43588	478	4404	27845	492	76808	60423	14000	105792	2489	3691	67256	0	13937
2000	170798	32750	4678	2558	9772	6367	56130	57896	37865	148224	543	6127	54881		165

"0" indicates that no catch estimates were generated

***SOURCE**: Catch statistics 1980-1993 from unpublished creel survey data.

APPENDIX E-2. TIDAL EFFORT STATISTICS AND SPORT CATCH ESTIMATES OF CHINOOK AND COHO FOR THE STRAIT OF GEORGIA, 1960 TO 1982*.

Year	Effort** (boat trips)	Catch	
		Chinook	Coho
1960	189,150	83,000	238,000
1961	199,935	63,000	152,000
1962	205,547	86,000	167,000
1963	247,590	65,000	199,000
1964	198,120	51,000	182,000
1965	250,020	53,000	175,000
1966	259,100	80,000	249,000
1967	254,500	115,000	200,000
1968	265,030	150,000	250,000
1969	281,475	185,000	200,000
1970	306,255	220,000	500,000
1971	341,123	255,000	800,000
1972	300,349	287,000	335,000
1973	293,141	272,000	373,000
1974	443,441	269,000	772,000
1975	334,490	398,000	454,000
1976	340,729	490,000	415,000
1977	363,350	372,000	682,000
1978	369,035	500,000	1,103,000
1979	404,710	350,000	708,735
1980	510,400	204,100	393,500
1981	494,604	197,239	317,091
1982	559,395	124,390	411,686

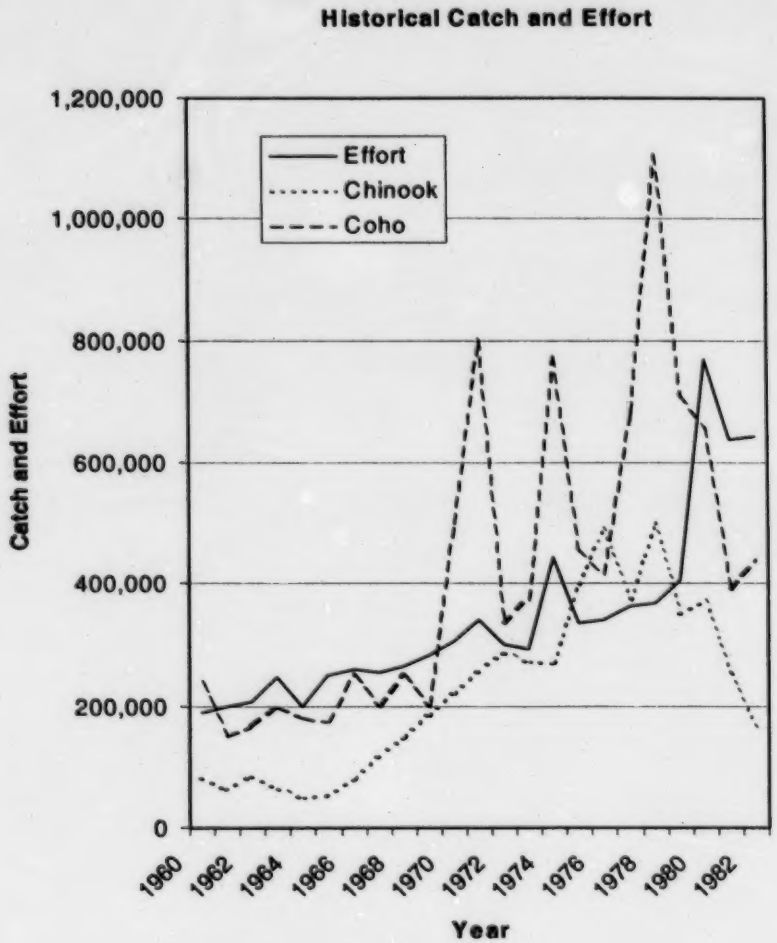
*SOURCE: Coho catch statistics: 1960-1978 from Argue et al. (1983); 1979 from R. Kadowaki (Fisheries and Oceans Canada, Pacific Bio. Stn. Nanaimo, B.C. pers. comm.); 1980-1982 from unpublished creel survey data.

Chinook catch statistics: 1960-1977 from Argue et al. (1983); 1978 and 1979 from B. Riddell (Fisheries and Oceans Canada, Pacific Bio. Stn. Nanaimo, B.C. pers. comm.) following the methods of Argue et al . (1983); 1980-1982 from unpublished creel survey data.

Effort statistics: 1960-1979 from published and unpublished Fisheries Officer statistics; 1980-1982 from unpublished creel survey data.

**Effort prior to 1980 (the start of the creel survey) may not represent boat trips.

APPENDIX E-3. STRAIT OF GEORGIA HISTORICAL CATCH* AND EFFORT** GRAPH, 1960 TO 1982.



*SOURCE: Coho catch statistics: 1960-1978 from Argue et al. (1983); 1979 from R. Kadowaki (Fisheries and Oceans Canada, Pacific Bio. Stn. Nanaimo, B.C. pers. comm.); 1980-1982 from unpublished creel survey data.
Chinook catch statistics: 1960-1977 from Argue et al. (1983); 1978 and 1979 from B. Riddell (Fisheries and Oceans Canada, Pacific Bio. Stn. Nanaimo, B.C. pers. comm.) following the methods of Argue et al . (1983); 1980-1982 from unpublished creel survey data.
Effort statistics: 1960-1979 from published and unpublished Fisheries Officer statistics; 1980-1982 from unpublished creel survey data.
**Effort prior to 1980 (the start of the creel survey) may not represent boat trips.

APPENDIX F. HISTORICAL REGULATION CHANGES AFFECTING THE STRAIT OF GEORGIA AND NORTHERN VANCOUVER ISLAND SPORT FISHERY*.

1981	July 1, chinook minimum size limit changed from 30 cm to 45 cm. Minor spot closures, E.g. River mouths only.
1982	Annual bag limit established at 30 chinook.
1985	May 15, daily limit reduced from 4 to 2 chinook. June 5, annual limit reduced from 30 to 20 chinook. Spot closure plan implemented (32 closures), similar program continues to present day.
1988	April 1, annual bag limit reduced to 8 chinook. A proposed chinook minimum size limit of 62 cm (not enforced).

The Strait of Georgia has been divided into 2 areas: 1. Victoria area, Cadboro Bay to Sheringham Point. 2. The rest of the Strait of Georgia.

1989	Feb 1, 62 cm minimum size limit for chinook. Aug 16, Victoria area, minimum size limit for chinook reduced to 45 cm and the annual limit increased to 20 fish. Strait of Georgia, chinook size limit of 62 cm and an increase in annual limit to 15 fish.
1992	Feb 6, daily limit for lingcod reduced to 1 and minimum size limit of 65 cm established.
1994	Daily possession limit for coho reduced from 4 to 2, minimum size limit increased from 30 cm to 41cm. Annual limit of 10 lingcod.
1998	July 1, barbless hooks in tidal waters. May 4, non-retention of coho in all tidal and non-tidal waters (some exceptions). Creation of Red zones (no fishing) and Yellow zones (fishing allowed). Spot closures for sockeye.

***SOURCE**: regulation changes 1981 and 1982, English et al. (1986); 1985 T. F. Shardlow, et al. (1989); 1988 T. F. Shardlow, et al. (1989); 1989 L. D. Collicutt et al. (1990); 1992, 1994 Wendy Grider (Fisheries and Oceans Canada, Vancouver, B.C. pers. comm).

APPENDIX G. SPECIES BREAK DOWN OF FISH COMMONLY INCLUDED WITH OTHER GROUNDFISH.

Common Names	
Pacific Cod	*gadus macrocephalus*
Pacific Tomcod	*Microgadus proximus*
Walleye Pollock	*Theragra chalcogramma*
Pacific Hake	*Merluccius productus*
Perch (all species)	Family *Scorpaenidae*
Greenlings (all species)	Family *Hexagrammidae*

APPENDIX H. TOTAL ESTIMATED EFFORT AND SPORT CATCHES FOR NORTHERN VANCOUVER ISLAND (totals include data for all months sampled).

Year	Effort	Salmon Catch						Total Salmon Release		Groundfish Catch				Total Finfish Catch
		Chinook	Coho	Chum	Pink	Sockeye	Total Salmon	Chinook	Coho	Halibut	Lingcod	Total Rockfish	Other	
*1998	16408	2366		850	15004	440	18660	6691	30857	3652	1521	12010	248	36091
*1999	39151	7813	430	607	52359	1538	62743	6844	34829	6713	2056	19354	143	91145
*2000	15934	4628	125	103	23519	744	29172	4904	9626	1524	1066	8959	0	44845

*1998 and 1999 Access point creel survey catch estimates are for July, August and Sept.
*2000 Access point creel survey catch estimates are for July and August.

APPENDIX I. SALMON CATCHES AND EFFORT BY MONTH AND STATISTICAL SUB-AREA FOR NORTHERN VANCOUVER ISLAND, 2000.

Month	Sub Area		Effort	Catch						Released	
				Chinook	Chum	Coho	Pink	Sockeye	Total Salmon	Chinook	Coho
7	A	Catch	2323	498	4	7	2689	54	3291	1068	2092
7	A	STD	1067	260	4	9	1588	29	1879	543	1018
7	B	Catch	1974	846	6	6	1630	86	2576	776	423
7	B	STD	369	204	7	7	423	43	579	227	135
7	C	Catch	1886	884	0	6	3612	252	4754	570	610
7	C	STD	318	174	0	6	715	79	894	147	158
7	E	Catch	892	0	0	0	174	0	174	110	57
7	E	STD	4	0	0	0	79	0	79	45	30
8	A	Catch	2474	558	32	32	1888	48	2559	992	2201
8	A	STD	464	154	24	34	527	30	639	389	627
8	B	Catch	2559	587	33	33	2954	62	3669	290	1174
8	B	STD	479	165	24	34	754	40	863	164	288
8	C	Catch	3083	1240	28	41	9207	242	10769	1078	2660
8	C	STD	257	158	17	21	1031	61	1124	228	387
8	E	Catch	743	15	0	0	1365	0	1380	20	409
8	E	STD	254	10	0	0	560	0	564	13	176
Total		Catch	15934	4628	103	125	23519	744	29172	4904	9626
		STD	1397	464	39	54	2333	123	2721	775	1318

APPENDIX J. GROUNDFISH CATCHES AND EFFORT BY MONTH AND STATISTICAL SUB-AREA FOR NORTHERN VANCOUVER ISLAND, 2000.

Month	Sub Area		Effort	Catch		
				Halibut	Lingcod	Rockfish
7	A	Catch	2323	323	217	1816
7	A	STD	1067	132	149	902
7	B	Catch	1974	330	276	1259
7	B	STD	369	108	82	358
7	C	Catch	1886	75	95	533
7	C	STD	318	30	44	145
7	E	Catch	892	8	0	471
7	E	STD	4	8	0	181
8	A	Catch	2474	281	92	1811
8	A	STD	464	111	47	547
8	B	Catch	2559	328	233	2319
8	B	STD	479	108	82	561
8	C	Catch	3083	102	144	642
8	C	STD	257	43	48	153
8	E	Catch	743	77	9	108
8	E	STD	254	41	8	54
	Total	Catch	15934	1524	1066	8959
		STD	1397	240	205	1279